

A-20 Havoc

in action



Aircraft Number 56
squadron/signal publications

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in action

by Jim Mesko
illustrated by Don Greer



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An A-20G of the 90th Bomber Squadron, 3rd Bomb Group, warming his engine prior to attack on a Japanese position in Northeast New Guinea.

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DEDICATION

This book is dedicated to the A-20 crews who faced the enemy, especially those in the early days, before the advent of allied air superiority.

"Little Isadore", an A-20G from the 89th Bomb Squadron, in flight over the Philippines in 1944. (Swain)



Model 7B

In the mid-1930's, numerous international incidents flared up throughout the world which would eventually engulf the world in the most devastating war in its history. In the far East, Japan took Manchuria from the Chinese and then used it as a base for further aggression against them in 1937. Italy used a trumped up border incident in Ethiopia as an excuse for invading the tiny African nation in 1935. Adolf Hitler, in open defiance of the Versailles Treaty, created the Luftwaffe in March, 1935, and reoccupied the demilitarized zone of the Rhineland a year later. During the summer of 1936, the Spanish Civil War broke out. This was to serve as a dress rehearsal for World War Two. Germany and Italy supporting the Nationalist rebels while Russia gave aid to the Loyalist government. All three countries tested their latest weapons and sent troops and aircrews to gain combat experience.

Though most individuals in the United States chose to ignore the gathering war clouds, a few were farsighted enough to begin laying plans for the possibility of U.S. involvement. Fortunately, this included the design staff of the Douglas Aircraft Company. In appraising the future needs of U.S. Army Air Corps attack aircraft, Douglas realized that the current concept of single engine attack aircraft, epitomized by the Northrop A-17, would never be sufficient for a modern war. Rather, the staff felt that a new class of light, twin-engine planes would have to be developed. In a rather unique move, Douglas decided to begin the basic design of such an aircraft even before the army requested such an aircraft.

The design team, made up of Jack Northrop* and Ed Heinemann, began in March 1936 to work on the basic design. This initial version, designated Model 7A, was to gross 9,500 pounds, fly at 250 miles an hour, and have a crew of three. By December 1936, the design was over fifty percent complete but new information coming out of the Spanish Civil War caused Douglas to hold up further work. By the fall of 1937, the army had formalized their requirements and issued a design competition based on intelligence material from Spain. These specifications included a 1200 mile range, a speed of over 200 miles an hour, and a bomb load of 1200 pounds.

With these design requirements in hand, the team set about to improve their initial plans. Unfortunately, Northrop decided to resign from Douglas, and Heinemann took over as head of the team. He began to revise the basic 7A plan to fit the new requirements. A set of interchangeable noses was added, a clear one for use by a bombardier, and a solid one fitted with four machine guns for the ground attack mission. Additional power was gained by replacing the original 450 horsepower engines with the Pratt and Whitney R-1830C Twin Wasp engines which developed 1100 horsepower. This revised design was designated the Model 7B and as finally envisioned, had a single tail, twin engines, shoulder mounted wings, tricycle landing gear, and a retractable dorsal turret. This design was submitted to the Army in July, 1938, along with others from Bell, Stearman and Martin. After looking them over, the Army invited each company to build a prototype for consideration. All but Bell opted to do this and the Bell design was replaced by one from North American Aviation.

Work began shortly thereafter and by late October, the aircraft was ready for flight tests, and on October 26th, the Douglas 7B took to the air for the first time. In the many flights which followed, the aircraft proved to be exceptionally maneuverable, fast, and displayed no handling vices. These results impressed the Army observers but the U.S. was still in the grip of isolationism and no decision was made concerning the purchase of the plane. Fortunately for Douglas though, these tests coincided with a visit to the United States of the French Purchasing Commission. The French had belatedly realized the dangers that the fascist regimes in Germany and Italy posed to them and had finally embarked on a massive modernization of their armed forces, particularly the air force. Unfortunately, the French aviation industry, for a variety of reasons, was unable to fulfill these

needs. Thus, the commission was touring various U.S. aviation companies in the hope of finding suitable aircraft for their needs when it received word from various contacts in the government about the new Douglas design. Members of the commission were given permission to witness the trials, though this was kept secret so as not to arouse the isolationists.

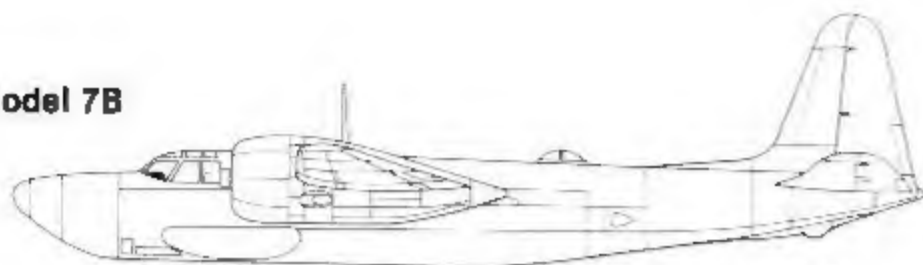
After observing the 7B in flight, the French were so impressed with it that they asked to be allowed to participate in some of the flights, a rather unusual request since the aircraft was still under consideration by the army. However, permission was given and throughout December 1938 and into January, members of the commission participated in numerous flights. Unfortunately, on January 23rd, during a demonstration of single engine performance, a power failure caused the aircraft to go out of control and crash. The Douglas test pilot, John Cable, was able to bail out but his chute failed to open and he died on impact. With Cable, on this flight was a French observer, Captain Maurice Chemidlin. He was unable to bail out but survived the crash and was carried from the wreckage on the remains of the vertical fin. Several newsmen discovered he was French and within a short time, there were loud cries from the isolationists throughout the country about this incident. The brunt of this outburst was directed at General Hap Arnold, the Air Corps Chief of Staff, and for nearly a year after this incident, he was subject to harassment by political officials.

The forerunner of the A-20, the Model 7B, shortly after its maiden test flight. The initial tail layout was revised with the horizontal tail surfaces being moved forward. The long plexiglass housing forward of the dorsal turret is an antenna housing. (McDonnell Douglas via Gann)

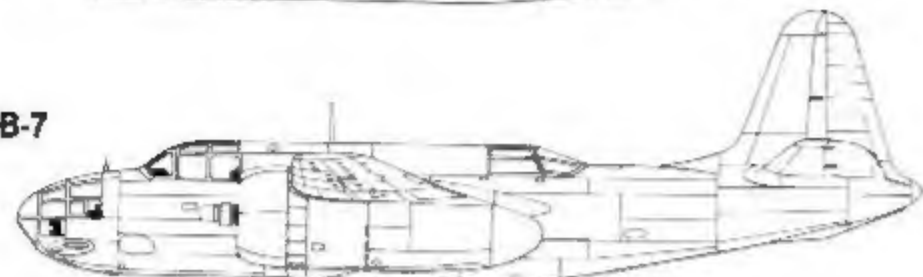


*Northrop had founded the Northrop Aviation Corporation but had recently merged with Douglas.

Model 7B



DB-7



DB-7

Despite the crash of the 7B, the French were very impressed with the aircraft's handling characteristics, speed, payload and maneuverability. They were also so desperate for modern aircraft that less than three weeks after the accident, they presented Douglas with an order for 100 aircraft which shortly thereafter, was increased to 270. However, the French indicated that certain changes would be required in the design to keep the aircraft from becoming obsolete before it reached service. They wanted the aircraft's range and bomb capacity increased. They also stipulated that additional armor, French instruments and French machine guns be fitted to production aircraft.

As a result of these requests Heinemann suggested to Donald Douglas, the company's president, that the design be drastically revised to meet the French requests, and to improve the basic aircraft. After much discussion Douglas gave his permission and Heinemann began to redesign the 7B. The first major change saw the fuselage deepened and its cross section narrowed. This provided additional room for more fuel tanks and bombs while decreasing wind resistance. Unfortunately, it resulted in the crew being unable to change positions with one another due to the narrowness of the fuselage. Because of this there was no possibility for either the bombardier or gunner, to take over the controls if the pilot were killed or wounded. Later, a set of rudimentary controls were provided for the gunner, but because his visibility was so limited they were of little practical value. Eventually they were deleted on later models.

The second major change involved repositioning the wings. In the revised design they were mounted at shoulder height on the fuselage as compared to the high wing mount on the 7B. Though this required the nose landing gear to be lengthened, the main landing gear remained basically unchanged. This was due to the lowering of the nacelles from the midwing position on the old model to an underslung arrangement on the new aircraft.

With the redesign of the fuselage the overall outline of the aircraft changed drastically. The glass nose took on a pointed, angular shape and had a series of stepped glass panels. No provisions were made for a solid nosed version but on either side of the nose two fixed .30 caliber machine guns were fitted slightly behind and below the glass. Further aft the fuselage line dropped down just past the trailing edge of the wings where the rear gunner was situated in a glass enclosed position. The glass could be slid open so that the single .30 caliber machine gun could be brought to bear on enemy interceptors. A ventral gun position was also fitted to counter attacks from below. The fuselage then tapered to a point with the fin gradually narrowing to a small tip. The earlier crash had shown the original tail surface needed strengthening so in this design the structure was substantially reinforced internally.

When the final blueprints were finished the new plane received the designation DB-7, which indicated **Douglas Bomber 7th type**. This was due to the fact that at this time there still was no order from the army so Douglas had no military nomenclature to use. However, within three months of the initial French order the army decided to place an order with Douglas and the official designation of **A-20** was introduced. The use of this dual designation system caused some initial confusion in labeling the various models for each country. These designations were often interchanged in press reports and official releases which caused some contradiction as to who was using what. Eventually, this was ironed out but for the first two years of production and service the dual designation caused a good deal of ambiguity.

With the completion of plans for the new plane Douglas began work on the prototype. Incredibly, this first model was ready by August, and on the 17th of the month took to the air for the first time. When one considers that only six months had elapsed between the crash of the 7B and the complete redesigning and construction of the DB-7 prototype, the scope of this achievement becomes evident.

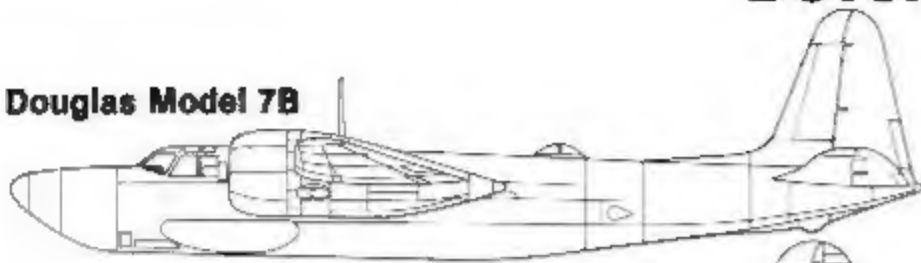
Following the initial flight tests during which the soundness of the design became obvious Douglas began production of the aircraft at their El Segundo plant. The first DB-7 was accepted from the plant in October, 1939, while in the same month the initial order of 100 aircraft was increased by 170. However, in this second order the French specified that the original single speed 1100 horsepower engines be replaced by the more powerful two speed 1200 horsepower Pratt and Whitney R 1830-SC 4G. Unfortunately, delivery of these engines were late but the French were in such desperate need of the aircraft that they agreed to allow Douglas to use the older engines to keep the production line open. It wasn't until after the 30th aircraft in the second contract batch was finished that the new engines began arriving for installation.

The first French DB-7 runs up her engines during preflight. The B-3 on the tail is the French designation for a three place level bomber. (Cuny)

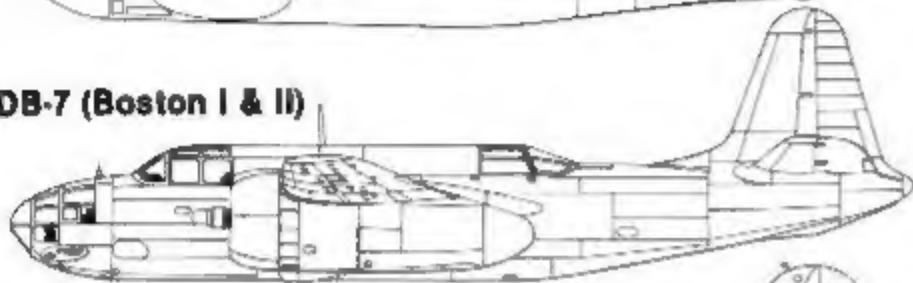


Development

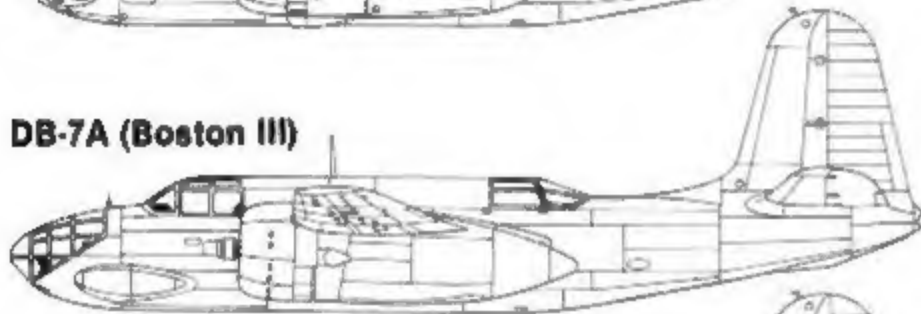
Douglas Model 7B



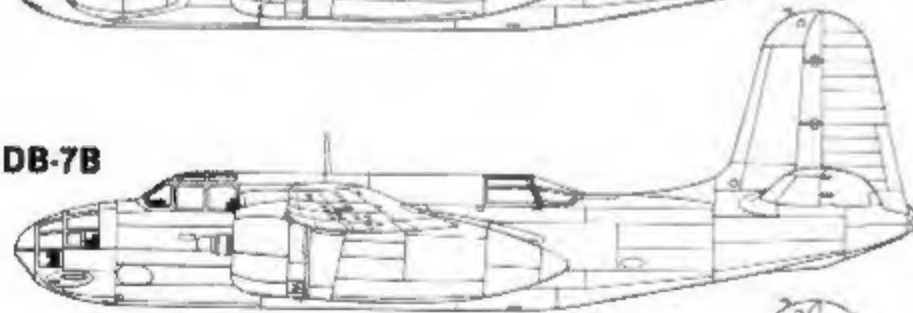
DB-7 (Boston I & II)



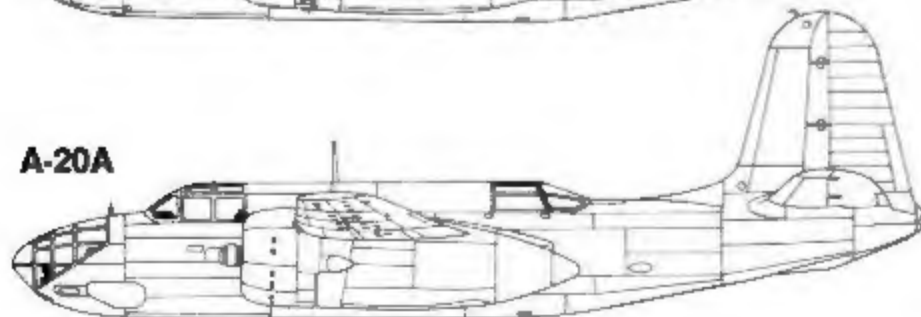
DB-7A (Boston III)



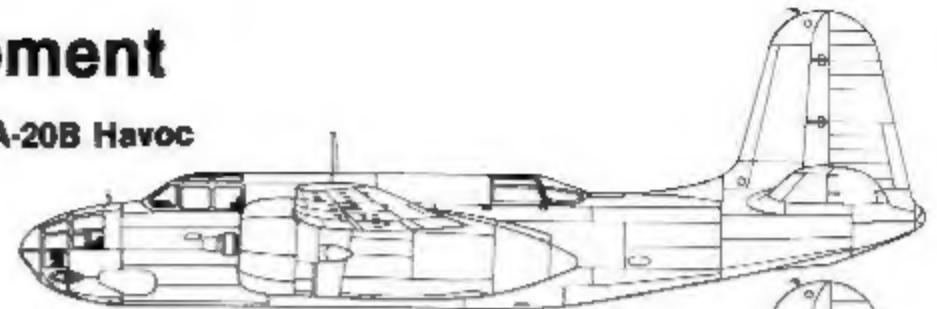
DB-7B



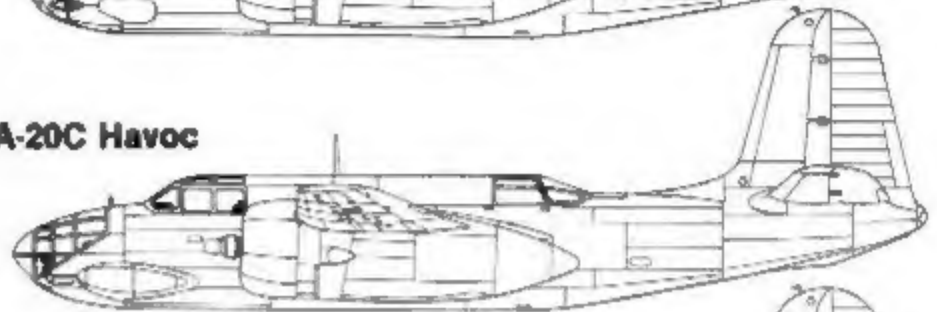
A-20A



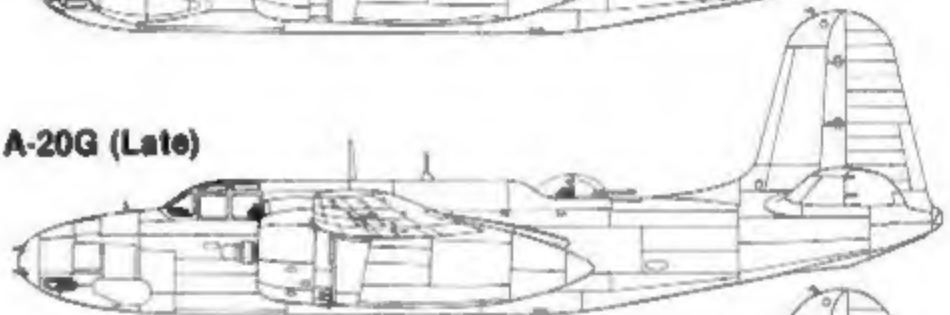
A-20B Havoc



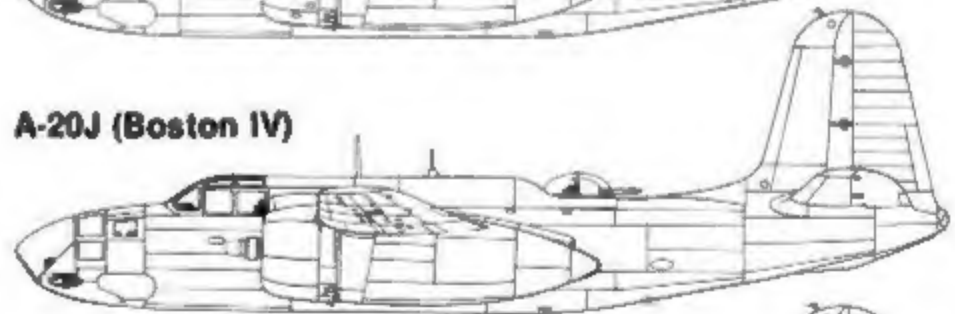
A-20C Havoc



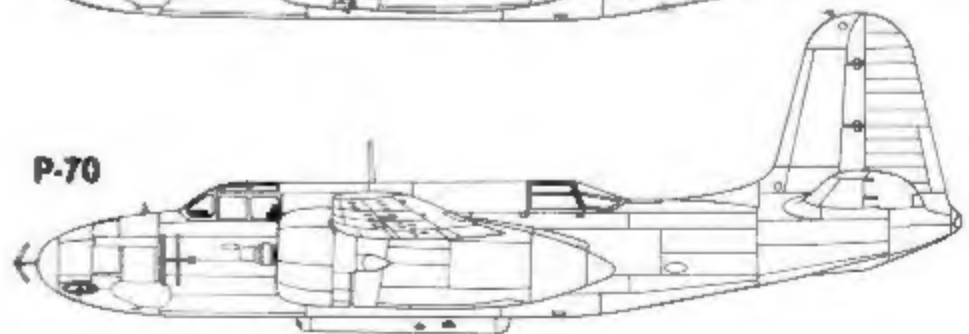
A-20G (Late)



A-20J (Boston IV)



P-70



To War

On September 1st 1939, German troops invaded Poland and ignited the six year conflagration known as World War Two. Hitler had hoped that France and Great Britain would not honor their mutual defense treaty with the Poles but for once the leaders of these nations showed some backbone. Within two days both countries declared war on Germany. But aside from a few small demonstrations of force neither did anything to aid the hard pressed Polish forces. Using their newly developed "Blitzkrieg" tactics, the Nazis crushed the valiant but hopelessly outdated Polish Army. In the air the Luftwaffe swept the air clean of the pitifully small and outdated Polish Air Force. Then it turned its attention to the lines of retreating soldiers and civilians. These were attacked with a total disregard for the rules of war. Finally, when these were decimated, the Luftwaffe struck at the main cities. Warsaw in particular was singled out and subjected to a massive aerial bombardment. By September 28th, after only three weeks of war the Poles were forced to surrender. For the next six years Poland experienced the cruel and vicious rule of the master race.

A little over a month after the Poles capitulated, the French accepted the first DB-7 from Douglas. The massive power demonstrated by the Luftwaffe during the Polish campaign had made an impact on the French. The nation's leaders realized that the *Armée de l'Air* was woefully ill-equipped to stand up to the powerful German air force. This impression was further heightened by the Nazi propaganda machine of Joseph Goebbels who portrayed the Luftwaffe as an invincible force. To counter this potent war machine the French increased the pace of their already accelerated rearmament program for the Air Force. Nowhere was this more evident than in the way the French kept constantly increasing their order with Douglas for the DB-7.

Yet despite the clear and present danger which threatened France, the *Armée de l'Air* was exceedingly slow in getting the DB-7 into squadron service. Douglas was able to complete the initial order for the first 100 machines by the end of 1939. Yet a number of factors delayed the aircraft's introduction into squadron service. As the United States was officially neutral at this time this presented some problems for delivery of warplanes to the belligerents of the conflict. Also, because the DB-7 did not have the range to be ferried across the Atlantic, the planes had to be shipped by sea. This required that they be broken down for shipboard storage, and then reassembled at their destination. The French had decided to organize this reassembly plant at Casablanca, in North Africa. However, the lack of trained personnel caused this process to fall far behind and soon there were large numbers of crated DB-7's on the docks awaiting re-assembly. French plans called for five squadrons (Groupes de Bombardement or G.B.s) to be reequipped with the DB-7. These were GB 1/19, 1/19, 1/32, 1/32 and 1/61. As the planes were assembled they were flown to these units. By the spring of 1940 only sixty-four of the initial order had reached these squadrons. Thus when the German army launched its massive attack through the Ardennes Forest on May 13th, none of these units were yet operational. This German offensive caught the French army completely by surprise. The French high command considered the Ardennes terrain impassable for tanks and thus had only deployed light forces in the area. However, the Germans capitalizing on the situation, poured ten panzer divisions through the *impassable* terrain by-passing the Maginot Line. This attack turned the flank of the British Expeditionary Force and the French Army, which at that time were in Belgium, countering another German attack.

To back up this attack Hitler used almost the entire Luftwaffe. It flew thousands of fighter and bomber sorties in support of the ground thrust. The *Armée de l'Air* rose as best it could to the challenge. Unfortunately the years of neglect could not be remedied in the frenzied months which had preceeded the war. French air bases were pounded and many aircraft were destroyed on the ground. The last moving German attack overran many others, capturing their vital repair facilities, supply depots, and communication centers. By the end of May the situation was desperate. The French pressed into service any plane which could fly. The DB-7s of GB 1/19 and 1/19 were among those committed. By this time the two units had 23 aircraft operational and these were ordered to France from Africa. On 31 May twelve aircraft took part in a mass attack on German columns around the Saint-Quentin and Peronne regions. They were greeted by intense ground fire and a covering force of BF 109s. Three of the DB-7s were shot down but at least one BF 109 was destroyed in the melee. Unfortunately, the French idea of massed attack entailed numerous strikes by small groups of aircraft. These piecemeal tactics cost the French dearly and over the next two weeks the DB-7s took part in six more such attacks. Most of these comprised less than a dozen aircraft and at least five more DB-7s were lost, mainly to ground fire. About half of these casualties were due to hits taken in the unprotected fuel tanks but nothing could be done to rectify the situation. The panzer divisions knifed across France destroying whatever resistance they found. The British were forced to evacuate their troops from Dunkirk taking with them thousands of French troops. After this it was only a matter of time before what was left of the French army was destroyed. By the time of the French surrender on June 25th over seventy DB-7 sorties had been flown but the piecemeal tactics had proven totally ineffective. A few days before the surrender all flyable DB-7s were ordered to North Africa.

One of the first DB-7s to be sent from North Africa to France to help stem the flood of German armor, is camouflaged in a random scheme of Green, Gray, and Brown on top with a Light Blue underside. Hatch under nose is the entrance to the bombardiers compartment. (E.C.P. Armes)





During the hectic period of the German invasion the DB-7s often operated from primitive grass airstrips. Here two DB-7's await service while ground crewmen work on the wing of a Martin 167 Maryland. (E. C. P. Armes)

The Vichy Air Force

Following France's capitulation, German troops occupied the northern two-thirds of the country. The remainder of continental France and the overseas colonies came under control of the Vichy government of Petain and Laval. Under the terms of the armistice the French were allowed to maintain some degree of self government and a small military force. The DB-7a which had escaped to North Africa formed the nucleus of the Vichy bomber force. There were ninety five aircraft (some still crated) available for use but this number was not sufficient to maintain five full squadrons. As a result GB II/19 was disbanded. The remaining units were divided between Algeria and Morocco. In Algeria GB I/19 and II/61 were based at Blida while in Morocco GB I/32 was at Casablanca and GB II/32 was at Agadir. Following the British attack on the French fleet off Algeria, DB-7s of GB I/32 carried out a retaliatory strike against Gibraltar. However, there was little damage to the British installations and all the French aircraft returned to their base. This was to be the only significant action the Vichy DB-7s were involved in until the American and British invasion of North Africa in November, 1942.

This DB-7 from G.B.I/32 is seen on patrol near the Moroccan coast in 1941, carrying a random spray pattern on the upper surface. In the early days of the war there was little uniformity in patterns, even between the aircraft of the same type. (Scuffs)



A DB-7 of G.B.II/19 in flight over mountainous terrain in North Africa after the armistice. Plane is being flown by the unit commander, Colonel Deluze, and is in early Vichy markings. (Cuny)

A lineup of DB-7s from G.B.II/19 at El Aouina airfield in Tunisia, before the introduction of the Red and Yellow stripes on the cowlings and tail that most Vichy aircraft carried. (C.A.C. via Camello)



One of the few photos seen of a DB-7 in full markings of the Vichy Air Force. The striping colors are Red and Yellow while the band under the wing is Red, White, and Blue. Rudder is also painted with vertical Red, White and Blue stripes. This plane is from G.B. II/19. (Cuny, C.A.C. via Camello)



DB-7A

While the DB-7's performance was very good the French had been interested in seeing if an increase in engine power would lead to practical benefits in the plane's overall performance. To meet this request Douglas substituted the 1600 horsepower Wright R 2600-A5B engine for the Pratt and Whitney. This engine was similar to the one being designed for use in the U.S. Air Corps version of the DB-7, the A-20A. So as not to interrupt the production line Douglas made very few changes in the basic DB-7 design. These changes were based solely in areas where stability and control were affected. To accommodate the new engine the nacelles had to be lengthened which resulted in a more pointed extension behind the trailing edge. The cowling was modified with a series of slots for cooling gills which ran down both sides from a point level with the leading edge of the wing. There was also a redesigning of the intake and exhaust arrangement on the cowling and nacelle. While the increase in power provided better performance it also increased the problem of directional stability, control, and structural integrity. To compensate for this the vertical fin and rudder were increased in area while the internal tail structure was strengthened where necessary. Prior to the increase in the fin and rudder area some experiments had been conducted on a DB-7 with twin tail surfaces to see if any benefit could be gained from this type of installation. However the new design proved more than adequate and the twin tailed configuration was dropped. The final change was the substitution of the landing gear system from the American A-20A version because it was superior to the original in terms of design and maintenance. This new version received the designation DB-7A, and on October 20th 1939 one week after they had increased the initial DB-7 order by 170 planes, the French signed a contract with Douglas for 100 up-powered DB-7As. French orders for the DB-7A would eventually total nearly a thousand machines, but only some 75 would be delivered before France capitulated and the Anglo-French purchasing agency arranged for the remaining aircraft to be delivered to Britain.

DB-7



DB-7A



Havoc, Ranger Turbinlite

In January of 1940 the British placed an order with Douglas for further development of the DB-7. Generally similar to its predecessors, the British ordered version was designated the DB-7B and was defined by a revised hydraulic system, fuel system, English instrumentation, revised nose transparencies, an internal tail light and fairings over two of the nose guns. However the first DB-7s which the British acquired were not the ones from this order. With the imminent fall of France, a hurried agreement was reached for the transfer of the bulk of the undelivered French contract to Britain. Also included in this was a small number of DB-7s which had been ordered by Belgium prior to its capitulation. This agreement was reached between the British and French purchasing commissions just hours before all French assets in the United States were frozen because of the armistice.

The first of these aircraft arrived in England during the summer of 1940. These included the Belgian machines powered by a single speed Pratt and Whitney R-1830-SC3 G engine. This powerplant did not give adequate performance for British requirements and a were relegated to the training role. They were given the designation Boston. Shortly thereafter a second, larger batch of French DB-7s arrived which were powered by the more powerful two speed R-1830-S3C4 G engine which gave far better performance. These were quickly modified with British guns and instruments, and designated Boston II's.

By this time the Battle of Britain was in full swing and the Royal Air Force (RAF) was desperately in need of night fighters and intruders. It was decided to convert over a hundred Boston II's to these two roles. For a short time, they were known variously as Moonfighter or Ranger. However neither of these received official approval and finally the name "Havoc" was chosen as the official title.

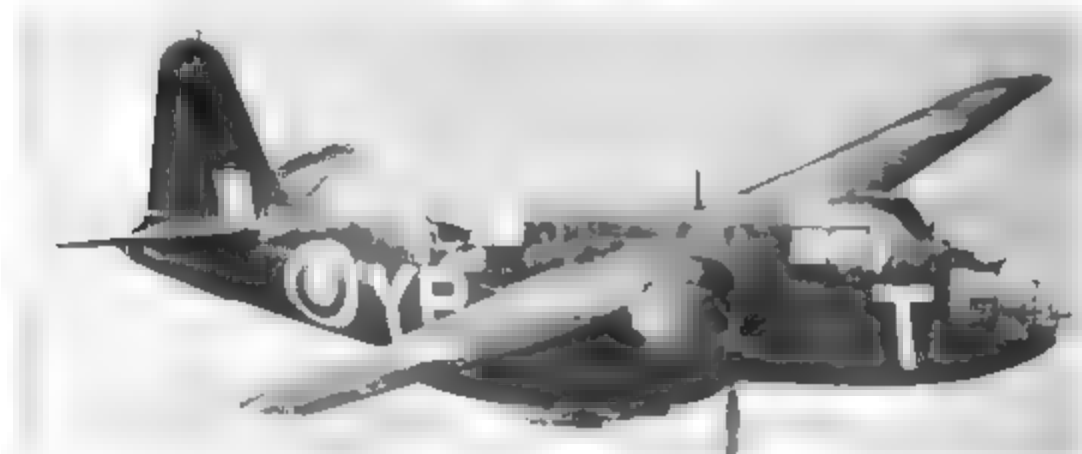
In the intruder role the DB-7 received the name Havoc I (Intruder). The basic aircraft received only minor modifications, the most noticeable of which was the flame damping engine exhausts. These effectively cut down the very visible exhaust flames which provided an aiming point for enemy observers and anti-aircraft gunners. With an armament of four nose mounted .303 machine guns, plus one for the rear gunner and a bomb capacity of 2000 pounds, these aircraft proved to be ideally suited for low level night sorties against German air bases and communication in occupied France. Operating singly they would often orbit enemy air bases to simulate returning bombers. When the field lights were turned on, the Havocs would commence their bomb run. After a short time the Germans became wise to these tactics and refused to be deceived. Not to be outdone, the British crews began orbiting the fields until a legitimate bomber began landing and then attacked. These attacks caused a great deal of destruction and often times the confused defenders fired on the wrong aircraft. On other occasions jittery gunners fired on returning Luftwaffe bombers when no Havocs were in the area. These attacks especially took their toll on German morale. After a long and arduous trip the returning bombers could not be sure if their base was still open for landing or worst yet, if they would be fired on by mistake. In this sense Havocs created problems for the Germans far out of proportion to the small number of aircraft used in the raids.

As a night fighter the DB-7s were designated Havoc I (Night Fighter). These aircraft had the bombardier's compartment replaced with a solid nose fairing fitted with four .303 machine guns. In addition it also carried the AI Mark V radar in the nose. These first conversions were issued to No. 85 Squadron in late 1940 and arrived just in time to combat the Luftwaffe's inauguration of night attacks against England. Throughout the winter of 1940-1941 these night fighters played a major role in defending English cities from the constant stream of German bombers.

With the success of the Havoc I night fighter the R.A.F. studied the possibility of increasing the firepower of the aircraft. With the help of Martin Baker Aircraft a new streamlined nose was designed and fitted with no less than twelve .303 machine guns. The internal arrangement of the guns, ammunition, and use of Martin ammunition boxes made it possible to mount such a large number of guns in the nose. This nose was a so fitted to the acquired French DB-7A aircraft which had the new R-2600 engines, revised



One of the French DB-7's taken over by the English and subsequently used for testing night intruder tactics. (Scutts)



A DB-7 Havoc I Intruder from No. 23 Squadron in early 1941. Aircraft is overall Black with Sky Gray codes and dull Red serial Number. (Scutts)

Closeup of the nose of a Turbinlite which was used in the training role by a Polish unit in England. An unusual aspect of this aircraft is the Green and Gray scheme rather than the more common overall dull Black Pattern. (Polish Association via Scutts)



A Havoc Turbinlite from No. 532 Squadron. The unusual exhausts greatly cut down on the telltale flame from the day bomber version. This aircraft's serial number is Z2184. (Scutts)

Turbinlite



Exhaust Dampner



nacelles and enlarged tails. The official designation for this version was Havoc I (Night Fighter). Most of these would eventually be converted to Havoc II Turbinlites.

While these events were going on experiments were carried out to test new ways of downing enemy bombers. One Havoc was fitted with a long cable (2000 feet) which carried a mine at the end. It was envisioned that the aircraft would let the cable out and then fly over a bomber's path. It was theorized that the German aircraft would become entangled in the cable and draw the bomb to it which would result in its destruction. A flight was formed in December 1940 to test the effectiveness of the design. These planes were at first known as Havoc IIIs, but this was later changed to Havoc I (Pandora). Only one kill was recorded and in October 1941 the flight was re-formed on the Havoc Turbinlite.

The Havoc Turbinlite was designed by Wing Commander W. Heimore and General Electric of England during the winter of 1940-1941. Basically the design consisted of a 2,700 million candle powered searchlight fitted in the nose of a Havoc. The batteries for this unit were carried in the bomb bay but because of their bulk and weight no armament could be carried. In addition the position of the searchlight necessitated the placement of the radar antenna on the sides of the nose. In theory the converted aircraft were to form a team with a pair of Hawker Hurricanes. The Turbinlite was to home in on enemy aircraft with its radar and at a distance of some 3000 feet illuminate it for the Hurricanes. These in turn would close to effective cannon range and destroy the intruder. Although basically a sound idea the actual practice proved to be very disappointing. The first Turbinlite flight was formed in May 1941 and by December an additional nine had been created. Often times the Hurricanes either were not available or failed to find the Turbinlites. It was finally decided to merge the aircraft into squadrons to help solve the problem. This took place in September 1942, and ten such squadrons were formed. However by this time the new Beaufighters and Mosquitos were coming on the scene with advanced radar. This spelled the end of the Turbinlite program and the last unit was disbanded in January 1943.

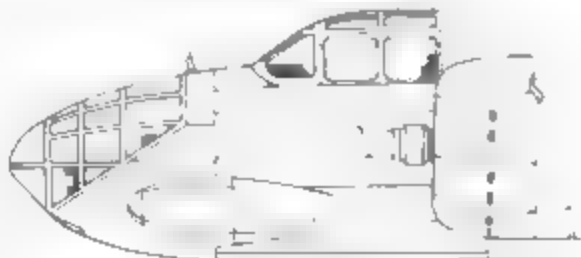
DB-7B

Ordered by the French, the new Douglas design had also caught the attention of the English. In January 1940 the British Purchasing Commission began to negotiate for the purchase and delivery of American aircraft. The DB-7 had interested the commission and it approached Douglas about the possibility of ordering the plane. They hinted at a substantial order if certain changes could be incorporated. Basically the British wanted the new DB-7A model for which the French had just contracted. However they stipulated that the plane must have British instruments and machine guns. Because of the British arrangement of the guns and ammunition, Douglas was unable to fit these inside the fuselage as on the French aircraft. To fit the British guns in place a tear-drop shaped fairing was designed to fit on the outside of the fuselage just behind the glazed nose. In addition they wanted the stepped glass arrangement in the nose rearranged to a straight diagonal configuration. These changes were the only noticeable external differences from the French DB-7As. Douglas agreed to make the changes and in February a contract was signed for one hundred and fifty of the modified aircraft under the designation DB-7B. Included in this contract was an option to increase the order to three hundred aircraft which was subsequently done in April. Following the signing of the contract the British chose Boston as the official name for the aircraft. Later as the British acquired other versions of the Boston they decided to add a Roman numeral after the name to distinguish the types. The DB-7B became Boston III with the earlier DB-7 and DB-7A acquired from the French and Belgian contracts receiving the numerals DB-7 Boston I, DB-7A Boston II, DB-7B Boston III respectively.

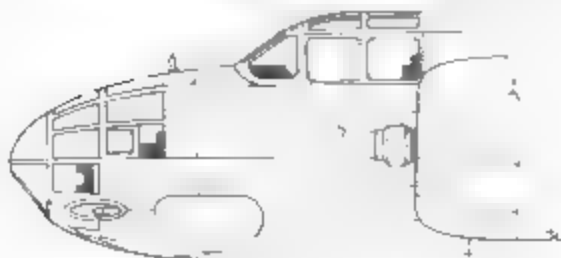
The first of these new aircraft reached England in late August 1941. These were issued to No. 88 Squadron but full Squadron complement of the aircraft was not available until near the end of the year.

As additional aircraft were delivered they began replacing the British Bomber in the night bomber role. A few were converted to the Turbine engine while some were assigned to intruder squadrons. As intruders they were sometimes fitted with four 20mm cannons in a gun pack beneath the fuselage. When so equipped no bombs could be carried. So as to cut down on the exhaust flames a speed damper was fitted to the exhaust. The aircraft so modified were designated Boston III (Intruder).

DB-7A

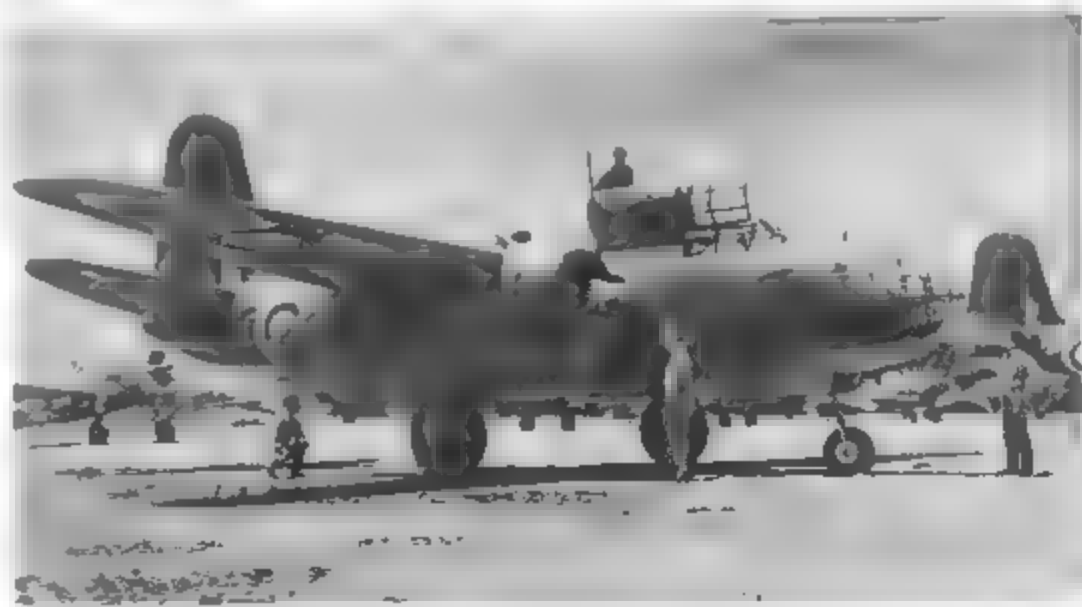


DB-7B



One of the first Boston IIIs delivered to the R.A.F. The plane is in flight over Los Angeles with the Coliseum directly above the aft crew station. (USAF)

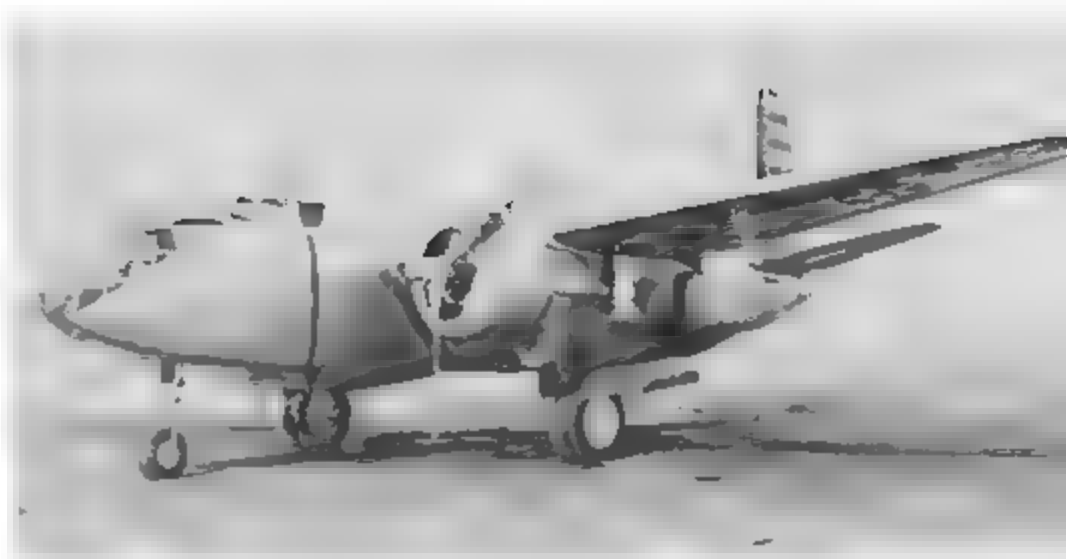
A Boston III being inspected at Maxwell Field in Alabama prior to shipment to England. Some British flyers trained on this type of aircraft in the United States since the English weather often made training impossible for days at a time. (USAF)



A-20

The A-20 was the initial version of the Havoc ordered from Douglas by the U.S. Army. The first aircraft was delivered in mid-1940 and its overall appearance corresponded roughly to the DB-7B. However, the major difference from the British model was in the engine nacelles. The Wright R 2600-7 engines were fitted with turbo-superchargers which were mounted internally on the outer flanks of the nacelles. These broke the previous smooth contour of the nacelles with huge protruding scoops with a rather awkward box-like appearance. Because of cooling problems this installation was dropped after the prototype. Since the plane was designed for low-level attack missions and since there were no plans to use the A-20 in high altitude missions, the turbo-supercharger was dispensed with after 63 of this version were produced; none would see service either in the attack or bombing role. Because of a need for night fighters, the first production A-20 was converted to the XP-70. The supercharged R 2600-7 was replaced by the R 2600-11 engine without a supercharger; a British radar set was installed in the nose and a ventral pack with four 20mm cannons was fitted under the bomb bay. Though not entirely pleased with the conversion due to poor performance, the Army had an additional 59 converted to this configuration and most were eventually used for training crews in radar controlled interceptions although some did see service in the Pacific.

The three remaining A-20s were converted to photo-reconnaissance aircraft. The designation YF-3 was given to one which was fitted with T-3A cameras in the bomb bay, single 30 caliber machine guns on either side of the nose, a pair of 30s in a mount in the rear gunner's position and another 30 in a ventral turret. The other two became YF-3s featuring experimental armament installations including single guns in the front, a remotely controlled aft-facing gun mounted in each nacelle for use by the gunner and a twin gun mount in the tail similar to the one carried on the Martin B-26.



The first A-20 delivered to the Army. This aircraft later became the first XP-70 night fighter. It eventually crashed in Florida in February, 1943. (N.A.S.M.)

In this view the distinct shape of the turbo-superchargers is shown in great detail. Because of problems with these and the realization that a low-level attack plane did not need them, they were deleted on future models. (McDonnell Douglas via Gann)



A-20A

The A-20A was the first "attack" model of the series which was procured by the Army. Its general outline was exactly like the A-20 with the exception that the bulky turbo-superchargers were removed and the Wright R-2600-3 engine was substituted for the R-2600-7. The engine cowlings had the same cooling vents as had been introduced in the DB-7A model. These were later deleted on future series as they proved of little practical value. It carried four .30 caliber guns in side packs behind the nose and a twin gun mount for the rear gunner along with the ventral gun position as in the XF-3. It also had the remotely controlled guns in each nacelle as had been tried in the YF-3, but no tail armament was fitted as in the YF-3. This version weighed slightly over ten tons and carried an 1100 pound bomb load at a top speed of 350mph. Range was 675 miles and the service ceiling was slightly over 28,000 feet. In the delivery of the first aircraft took place in December 1940. The Army ordered 123 machines, in the event, this order was later amended and an additional twenty were procured. Some of these were fitted with the more powerful R-2600-11 engine but there was no designation change.

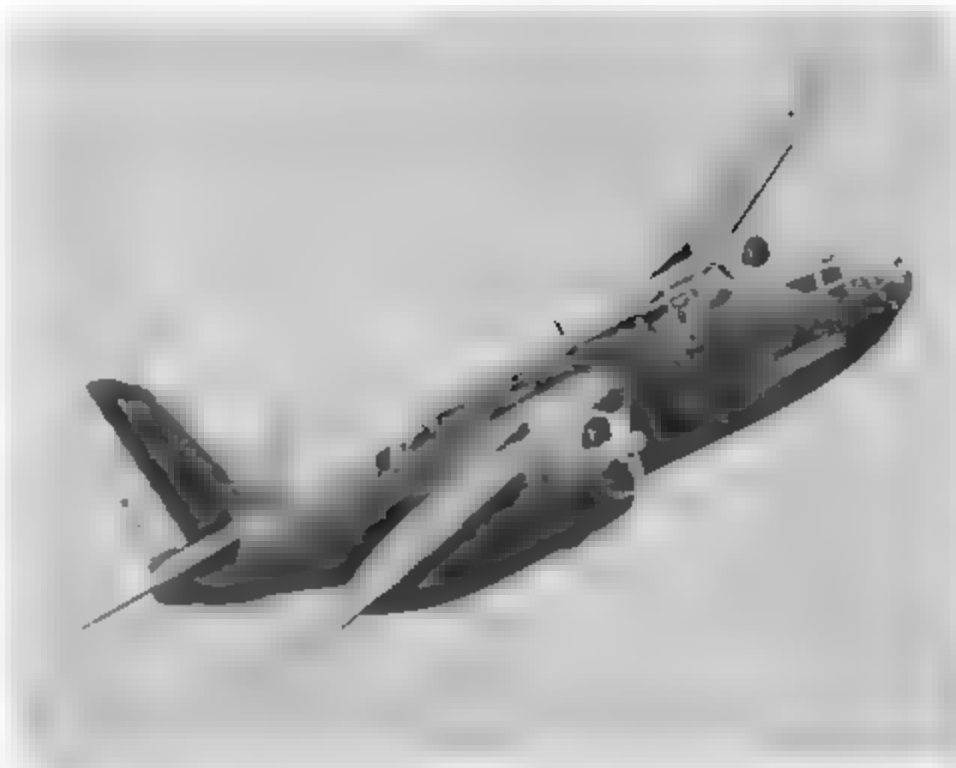
While this production run was in progress the Navy approached the Army with a request for a high speed utility aircraft for target towing. One A-20A was released to them for trials and received the Navy designation BD-1. The Navy was pleased with the aircraft's performance and subsequently requested additional aircraft but as the entire contract was already assigned the Army proposed that some aircraft be diverted from the A-20B contract. The Navy accepted this and these aircraft, coded BD-2, were later assigned to Marine utility units.



The clean lines of the A-20A are accentuated by its gleaming natural metal finish. Early A-20s were unpainted but in early 1941 this policy was abandoned and a number of different color schemes were applied and field tested. (USAF)

A-20A on a test flight over Palos Verdes Peninsula in California. No fuselage insignias were carried on the natural metal A-20s although they were carried in at least four positions on the wings. (McDonnell Douglas via Gann)





An A-20A from the 3rd Bomb Group camouflaged in Olive Drab 41 and Medium Green 42 with Neutral Gray undersurfaces. The vents on the cowlings sides were an identification point of the early A model. These were later deleted from future production runs. (USAF)

Cooling Vents



A-20 (Early)



A-20 (Late)

(Above right) In October 1941 large scale war games were held in the southern United States to test new tactics. Here a solitary A-20A from the 3rd Bomb Group sits in line with a number of B-18 Boms. The white crosses were temporary markings used for these games. Planes are seen at Langley Field, Virginia. (USAF)

This A-20A is finished in a pattern of Dark Green and Dark Earth over Light Gray as used on the early British models. Light colored line around gun blister is sealing tape. (USAF)



A-20B

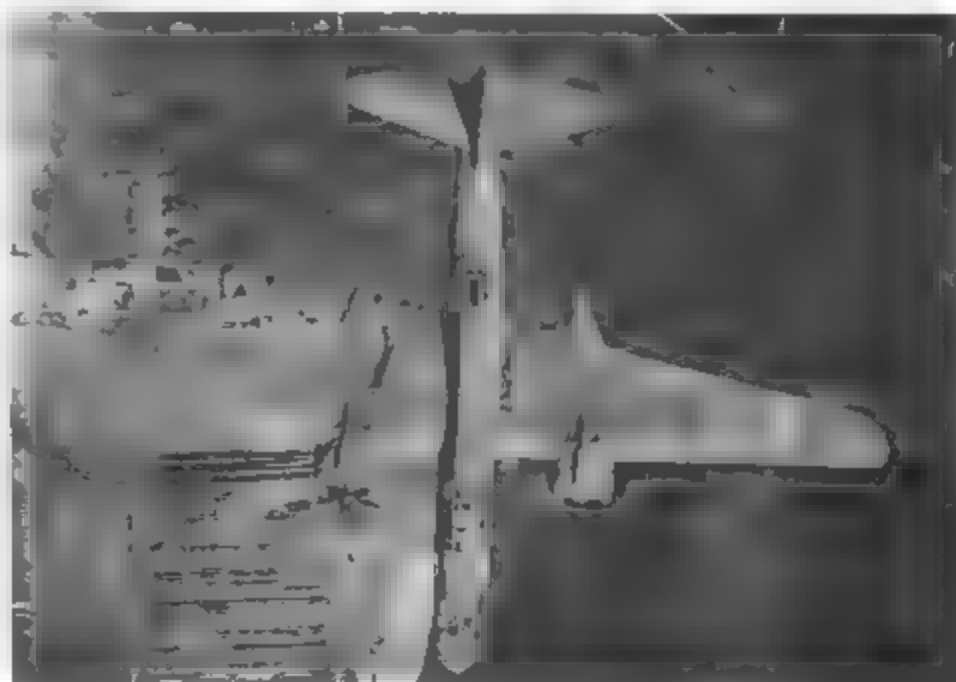
The original **XA-20B** was an A-20A modified in mid-1941 with three experimental gun turrets. Each turret was power-operated and fitted with twin .30 caliber machine guns. Two were mounted above and below the rear gunner's station while the third was fitted in the nose. The resulting tests did not prove successful and this configuration was dropped. The production version of the B reverted back to the general outline of the A-20A although a number of modifications were incorporated.

Outwardly the most noticeable change was in the nose area where a stepped arrangement of glass panels replaced the earlier slanted styles. This was also the first model to mount .50 caliber machine guns, with two mounted on either side of the nose and one for the rear gunner. The rearward firing nacelle guns were also kept on this series. The aircraft was powered by Wright R-2600-11 as used in the last 17 A-20A's. The aircraft was also modified to carry auxiliary fuel tanks for ferry purposes to reach the widely expanding battlefields.

In May the Army ordered 999 A-20Bs and 775 O-53a, a photo-reconnaissance version. However, the O-53 was subsequently deemed unnecessary since other aircraft were better suited for the role and the order was cancelled. To facilitate this increase in production Douglas geared up their Long Beach plant and all of the A-20Bs were produced there. Of the 999 produced, the majority 685 went to Russia under lend-lease. In addition to these, eight were transferred to the Navy for target towing duty under the designation BD-2.

Though this version followed the A series, in some respects the aircraft was inferior to the earlier model. For some unexplained reason self-sealing fuel tanks were not incorporated, nor was the aircraft as well armored as the A-20A, possibly due to the fact that the initial design was based on the DB-7A and the importances of these items had not yet been realized through combat experience. This could also explain why the majority of the aircraft were diverted to Russia as reports from the field came in about the deficiencies in the design.

(Above right) In this side profile of an A-20B the stepped arrangement of the glass nose is quite evident. Larger tail and extended nacelles were characteristics of all A-20s after the DB-7 model. (USAF)



A-20A



A-20B

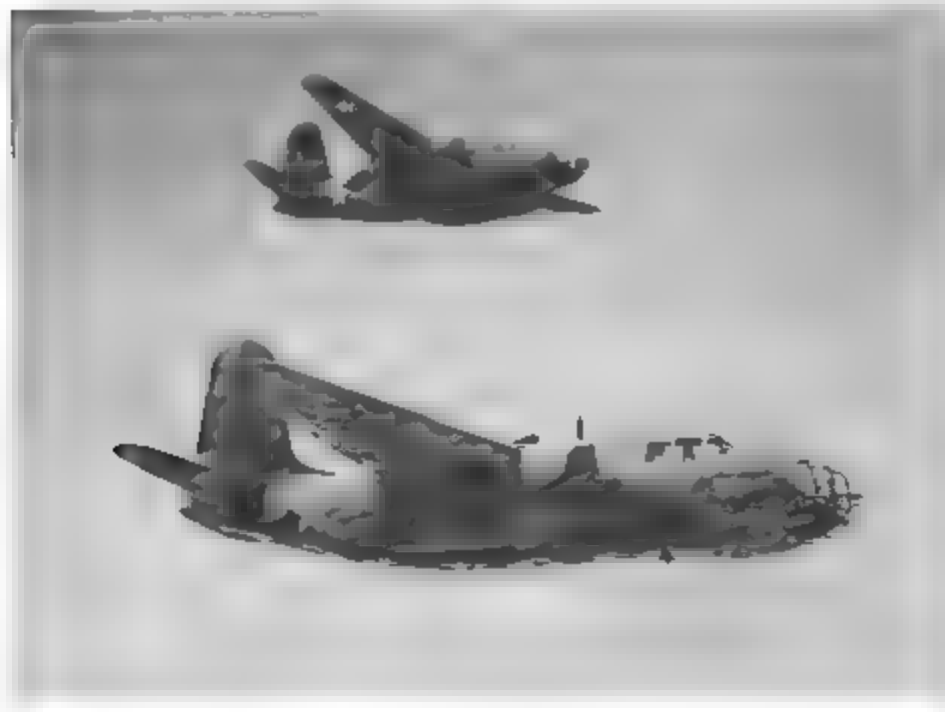
This overhead shot of an A-20B shows the slim fuselage which was a hallmark of the A-20. Unfortunately this precluded the possibility of either crew member taking over in case the pilot was killed or wounded. Light colored lines on the wings are walk areas and fuel filters are Red in color. (USAF)

A-20C

With the introduction of the A-20C in early 1941, British and American variants reached a point of near standardization, with only a few minor differences when compared to previous models. The powerplant was the Wright R-2600-23 developing 1600 horsepower giving the plane a top speed of 342mph, slightly below the A-20B. However this model carried additional armor and self-sealing fuel tanks which vastly improved the planes survivability in combat. The crews felt this more than compensated for the slight loss of speed. It was also the first version equipped to carry a standard 2000 pound Navy torpedo. Mounted on an external rack under the bomb bay it was only used operationally by the Russians as far as is known.

The glazed nose was identical to the A-20A but there were now four fixed .30 caliber machine guns mounted slightly behind and below the glass in a pair of gun packs with a distinctive teardrop shape. It also carried the standard twin guns in the aft position and the ventral tunnel gun. The nose guns were deleted since their use proved impractical. In the British version the U.S. weapons were replaced by the .303 machine gun.

Production of this version took place at the Douglas Santa Monica plant and under license by Boeing in Seattle. A total of 948 were eventually built with the Santa Monica plant picking up the lions share of the production run at 808 aircraft and Boeing completing 140. In British service the A-20C was given either the designation Boston I or II. The II A was produced by Boeing and differed only in the electrical system, the extension of the carburetor intakes over the cowling for tropical climates, and the deletion of the flame damping alligator tail exhaust pipe in favor of a ventral stub. A great many of the British machines were diverted to the Soviet Air Force but some of these were repossessed for use by American forces.



An A-20C with a long range fuel tank fitted under the fuselage. When these types of tankers were fitted, no bomb load could be carried in the bay. (USAF)



Long Range Fuel cell



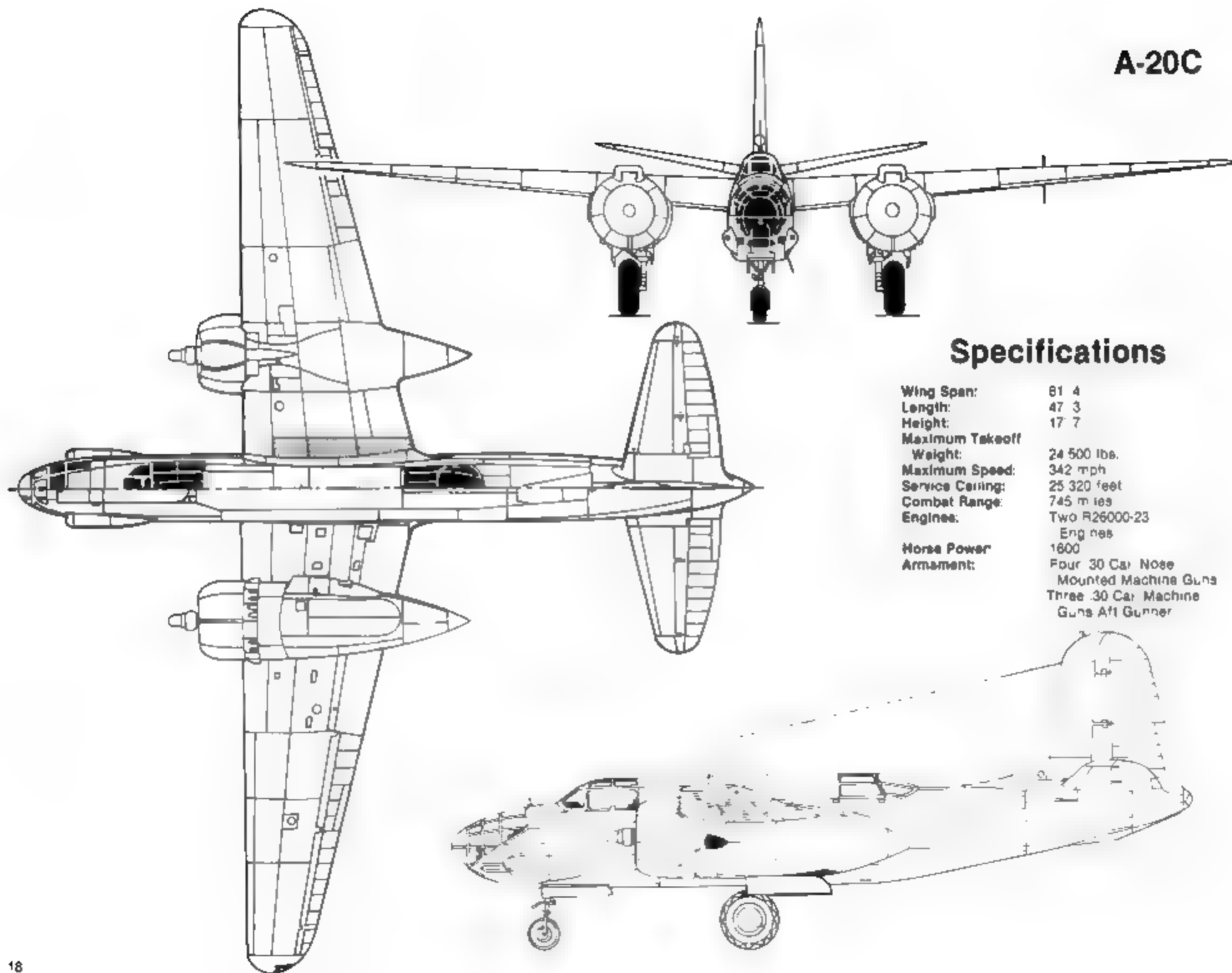
A-20B



A-20C

Two A-20C's from the initial production run on a training flight over California. Nearest aircraft is in the British style Green and Brown camouflage. In this model the nose reverted back to the A-20A configuration. (USAF)

A-20C



Specifications

Wing Span:	81.4
Length:	47.3
Height:	17.7
Maximum Takeoff Weight:	24,500 lbs.
Maximum Speed:	342 mph
Service Ceiling:	25,320 feet
Combat Range:	745 miles
Engines:	Two R2600-23 Engines
Horse Power:	1800
Armament:	Four .30 Cal. Nose Mounted Machine Guns Three .30 Cal. Machine Guns Aft Gunner

The Pacific

The first contact with enemy forces by U.S. A-20s came on December 7th 1941 when Japanese forces destroyed or damaged most of the A-20As based at the various army fields in Hawaii. It is believed that no A-20s were able to get into the air during the Japanese strike. For the island of Java the Dutch had ordered A-20s to bolster their bomber force which was made up mostly of antiquated Martin B-10s. Unfortunately none were on hand when the war with Japan broke out. A few crated A-20s eventually arrived but only one was assembled before Java capitulated. It flew a few last minute sorties but had no impact on the course of the battle. After the capture of the island the Japanese assembled a crated A-20 and were able to evaluate it along with numerous other captured allied aircraft.

Eight months passed before the A-20 again met the Japanese. In that time period every Allied position north of New Guinea and between Burma and Midway had been lost. By the summer of 1942 the Allies were in desperate straits. Attempts to build up a viable air force were proving extremely difficult as small quantities of aircraft dribble in. The first A-20As to arrive were assigned to the 3rd Attack Group. These arrived without guns or bomb racks and could not be used in combat until this hardware could be fitted. Fortunately there was a man with the 3rd whose ideas were to spawn a revolutionary concept in air warfare. Major Paul "Peppy" Gunn saw the unarmed A-20s and came up with the plan to put four .50 caliber machine guns in the nose thus devising the first in a deadly series of low level strafers. Equipped with these gunships, the 3rd hit the crack Japanese fighter base at Lae in August. Their heavy firepower inflicted substantial losses in this the first of many low level strafing missions. Unfortunately because of the small number available, only the 89th Bomb Squadron could be fully equipped with the A-20, though the 8th Bomb Squadron operated a few in conjunction with them. The A-20 also introduced the Japanese to "parafrogs", a small bomb which floated down to earth from a parachute and exploded into thousands of pieces of steel on contact, tearing both men and machines apart. Gunn had devised special racks for them and on September 12th nine A-20s hit the newly repaired base at Buna. This new weapon caught the Japanese completely by surprise and the results were devastating. Planes and men were torn apart by murderous waves of deadly metal.

From that point on, the A-20s were in constant action against the Japanese, hitting airfields, troop and supply concentrations, and shipping. Perhaps their most spectacular mission was during the Battle of the Bismarck Sea when A-20s teamed up with B-25s and R.A.A.F. Bostons in low level strikes against a resupply convoy. Coming in under 500 feet they helped decimate the Japanese formation. This spectacular victory firmly established the doctrine of low level tactics, and spelled doom for the Japanese in the area. Never again could they venture out in areas where the Allied Air Forces held air superiority. Many far flung posts, like Rabaul, were left to wither on the vine and Allied forces were able to bypass them.



One of the few A-20s sent to the Dutch on the island of Java in the early part of 1942. It was assembled by the Japanese following their capture of the island and flown back to Japan for evaluation. (USAF)

(Below left) This A-20A of the 58th Bomb Squadron was based in Hawaii during the spring of 1941. No A-20s were able to take off during the Japanese attack on December 7th, 1941. The camouflage pattern on this particular aircraft is an attempt at countershading with Olive Drab and Medium Green. (USAF)

Little Hellion, an A-20A from the 89th Bomb Squadron of the 3rd Bomb Group, after a crash landing at Port Moresby, New Guinea in November of 1942. This plane has had four .50 caliber machine guns fitted in the nose for use in ground strafing. (USAF)





An A-20 from the 3rd Bomb Group makes a low pass over a Japanese Betty at Lae Airfield, New Guinea. The large black hole in the center of the fuselage Hinomaru on the Betty is the crew entrance hatch. (USAF)



A flight of Australian A-20As from No. 22 Squadron return from a mission over New Guinea in early 1943. Aircraft are painted in the early Green and Brown scheme used on the first production aircraft for the British. (Australian War Memorial via Horne)

An A-20C from No. 22 Squadron over New Guinea in the summer of 1943. Aircraft has been modified with three .50 caliber machine guns in the nose and is painted in the Dark Green which Australian aircraft began operating in during this time period. (Australian War Memorial via Horne)



Against the Germans

On June 29th, 1942, Bostons from 226 Squadron carried out a raid against a rail road marshalling yard in France. With them on this mission was one Boston with an American crew from the 15th Bomb Squadron, the first such attack flown in Europe by a U.S. crew. A week later, on July 4th, six American crews from the 15th flew a mission against German airfields in Holland. Despite intense flak they pressed their attack and achieved good bombing results but unfortunately two aircraft were lost to ground fire. Three more such missions followed and in the early fall the unit was pulled out of action and assigned to the 12th Air Force which was being readied for the invasion of North Africa (Operation Torch). Although it had only limited combat experience, the 15th Bomb Squadron was the only unit in the 12th Air Force which had any at all. This was to prove a valuable asset in the early days of the fighting in Africa.

Two additional A-20 units, the 47th Bomb Group and the 68th Observation Group, were also assigned to the 12th Air Force. The 68th only used the A-20 for a short time before changing to fighter type aircraft. The 47th thus became the only A-20 group to see service in the Mediterranean. Originally a West Coast unit, the 47th had moved to England in October with 56 A-20Bs. In December the 47th transferred to North Africa and began flying missions against Axis supply lines, airfields, and troop concentrations. During these initial strikes the normal tactic was to sweep in on the target as low as possible, as had been practiced in training. These tactics had been successful in the Pacific against the lightly defended Japanese targets, but against the more heavily defended targets in Africa they resulted in prohibitive losses. The 47th soon switched to medium level bombing which cut losses though bombing accuracy fell off. In February 1943, Rommel unleashed a surprise attack against the Americans at Kasserine Pass. The inexperienced and poorly led American troops were no match for the wily *Desert Fox*, and the Afrika Korps tore a huge hole in the Allied line. Numerous airfields and supply dumps fell to the Germans and the Allied units in Tunisia faced a possible cut in their lines of communications. To help stem Rommel's attack, British and American aircraft carried out numerous attacks against German panzer columns. The 47th flew many of these sorties and on 22 February, alone, carried out eleven such attacks at minimal altitude. A number of their A-20s received wing damage from hitting the antennas of tanks and armored vehicles. In these low level strikes, only one A-20 was lost and by the end of the day, Rommel's attack had failed. In recognition of their outstanding job the 47th received a Distinguished Unit Citation for their action.

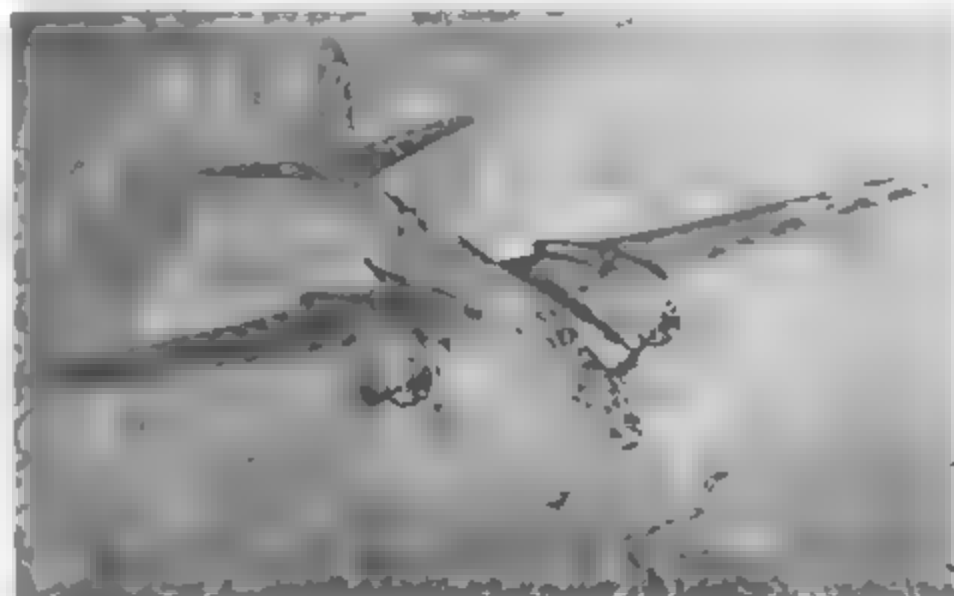
Following the blunting of this attack the German forces in North Africa retreated into Tunisia where they eventually surrendered in May of 1943. The A-20s then began hitting targets on Sicily in preparation for the landings there which took place in July. Operating in support of the ground forces, the ragety proved extremely effective in the hilly Sicilian terrain. Following the seizure of the island, the 47th, now the only A-20 unit, along with other 12th A.F. units, began softening up the Italian mainland for the follow-up invasion. After securing beachheads in September, the 47th moved to newly captured fields on the mainland. From that point until the end of the war the A-20s were primarily used to hit supply routes and frontline positions. Toward the end, the 47th experimented with radar directed bombing in the Po River Valley with some success, but by the end of the war had turned in the A-20s for A-26s and were in the process of transferring to the Pacific when the atomic bombs were dropped on Japan.

Lady Jean, an A-20B from the 47th Bomb Group, at Youks Les Bain, Algeria in December of 1942. Note how all the guns have been removed and stacked in front of the engines. An interesting point is the World War I type helmets on the wing. (USAF)



A-20Bs from the 47th Bomb Group on a mission over Tunisia in early 1943. Notice how crudely the tail numbers are applied and the combination of U.S. and British markings. (N.A.S.M.)

This A-20B from the 47th Bomb Group is on a mission over southern Italy during the spring of 1943. By this time the markings were being applied more neatly and the British fin flashes were no longer being carried. A different shade of Green has also been applied along the leading edges to break up the olive drab and help the aircraft blend into the background. (USAF via PIII)



Europe and the Mediterranean

The first Boston III's (DB-7B's) began to arrive in England late in the summer of 1941. A few were converted to Havoc II's or Tumbler's but most were assigned to day bomber units. The first unit to receive The Boston III was No. 88 (Hong Kong) Squadron from No. 2 Bomber Group. It had previously trained on Boston I's and received the new Boston III in October. Shortly after 88 Squadron converted to them, 226 and 107 Squadrons followed suit. All of these units had previously flown Blenheim IV's and although the Blenheim was a capable aircraft the design could no longer keep pace with advancements in the air war. The new Boston offered more power, twice the bomb load, and was 80 miles per hour faster. Throughout the fall and winter of 1941 these units retrained with the new aircraft and by the beginning of 1942 were ready for action. The first occasion for the aircraft's use in combat came in February 1942 during *Operation Cerberus*, the breakout of the Scharnhorst, Prinz Eugen, and Gneisenau from the French port of Brest. Aircraft from 88 and 226 Squadrons tried to locate the ships in the English Channel but only one plane succeeded in finding them and attacking. Unfortunately no hits were achieved but no aircraft were lost either. From that point on the tempo of operations increased as the R.A.F. employed the Boston for tactical bombing over France. The first such mission was flown

A Boston III prepares for takeoff from an English base in early 1942. Mission markers under the cockpit indicate that the plane has flown at least nine missions over occupied Europe. (Scutts)



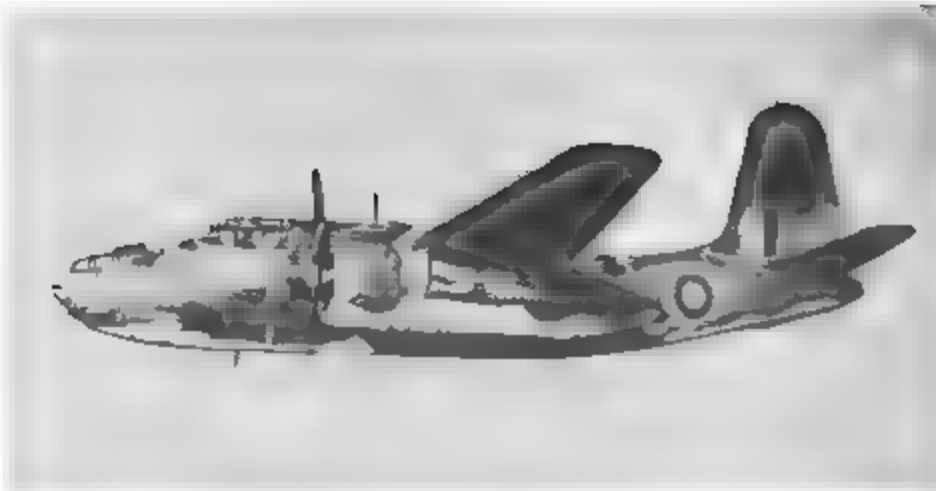
in March against the Matford Works at Poissy. The target was successfully hit but the aircraft flown by the Commander of 226 Squadron was lost. In addition to these day bombing units Boston II's were also used for night intruder missions by 23, 418 (Canadian) and 605 Squadrons. These units carried out night attacks against German airfields, supply dumps, and communications lines in order to keep up pressure around the clock.

Whether flown during the day or at night, the Bostons proved to be a rugged, dependable aircraft which was immensely popular with its crew. At low altitude the Boston was able to outrun the Spitfire V over a long distance and was only slightly slower than the Beau-ghter. Many times Bostons took a great deal of battle damage yet managed to stagger back to their English bases, often on only one engine. With this type of speed and rugged construction the Bostons were ideally suited for the dangerous low level missions which were their main forte. To help ward off German attacks from the rear, another .303 caliber machine gun was added to the rear gunner's position but this continued to be a weak point in the aircraft's defense.

While the bulk of the Boston II's were sent to England a few were diverted to North Africa in November 1941. These were assigned to No. 24 Squadron of the South African Air Force where they initially were used in reconnaissance flights. Unfortunately they usually operated a one and a number were lost until this practice was abandoned. During this period the limited number of Bostons on hand made it impossible to keep the squadron anywhere near full strength. In addition escorts were often not available. Under such conditions the unit suffered severe losses on a number of occasions when they ran into German fighters. On 10 December six Bostons were caught by Bf 109's and in a running battle five Bostons were shot down while the remaining one escaped only to crash land. By the end of December the squadron's available strength was so low that the high command ordered it to stand down. Though the unit had suffered numerous losses the main reason for the stand down was primarily because of mechanical problems. The harsh desert conditions had caused excessive engine wear. To alleviate this problem the planes were equipped with new air filters and modified to cut down on oil consumption.

These changes took nearly two months and it wasn't until 22 February 1942 that No. 24 Squadron now at full strength was ready for action. Fortunately the ear-orm stakes had been analyzed and new operating tactics devised. The most important of these was the decision to provide the squadron with a fighter escort whenever there existed the possibility of Axis fighter interception. In March, another South African unit, No. 12 Squadron began to operate Bostons alongside No. 24 Squadron. The two units frequently operated together throughout that long summer in the desert war. As the German and British forces fought a see-saw battle back and forth over the burning desert sand, the South Africans struck German tank and troop columns, airfields, and lines of communications. As the British fortunes ebbed they were forced back to the El Alamein line just outside Cairo. Here the German forces were at the extended end of a long supply line and Allied air forces made it almost impossible for supplies to reach the German front lines. Bostons were in the forefront of this effort. By October 1942 the Allied forces had built up sufficient strength to attack the undersupplied and understrength German troops. The great El Alamein offensive completely shattered the German forces, forcing a headlong retreat back to Tunis. During this retreat Bostons constantly strafed and bombed the retreating columns but suffered numerous losses from intense ground fire. Despite this the two South African units continued to strike at the retreating Germans. The Bostons were especially effective against the soft skinned German vehicles. With so few vehicles available the Germans could not afford the losses the Bostons inflicted. In that long retreat Boston crews flew countless sorties against strung out enemy columns. The effects of these strikes were devastating. Entire columns of vehicles were wiped out, and large numbers of axis troops were stranded, to be captured by the advancing British forces. Unfortunately the bulk of retreating German forces escaped because the British pursuit was not handled aggressively.

While this pursuit was taking place the Americans and British successfully invaded Morocco and Algeria. The Germans were now caught between two converging pincers. Their forces were gradually compressed into a smaller and smaller area of Tunisia where they were subjected to an incessant aerial bombardment. Finally out of supplies and ammunition, they surrendered in May 1943.



This Boston III from No. 107 Squadron is seen in flight as it returns from a mission over occupied Europe. This unit helped to pioneer many of the early tactics for using the Boston in low level missions. (Scutts)



The worn appearance of OM6-D, a Boston III of No. 107 Squadron during November of 1942. This machine crashed on 6 December 1942, after a sortie against the Philips works at Eindhoven. (Scutts)

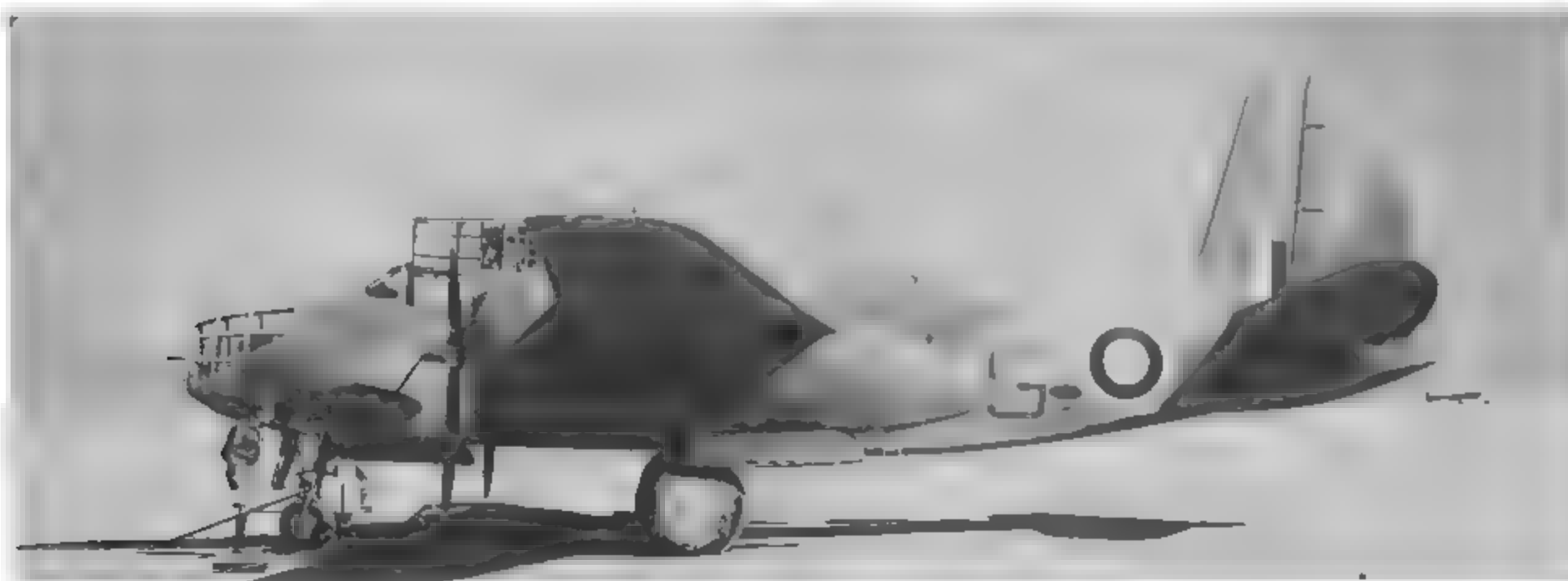


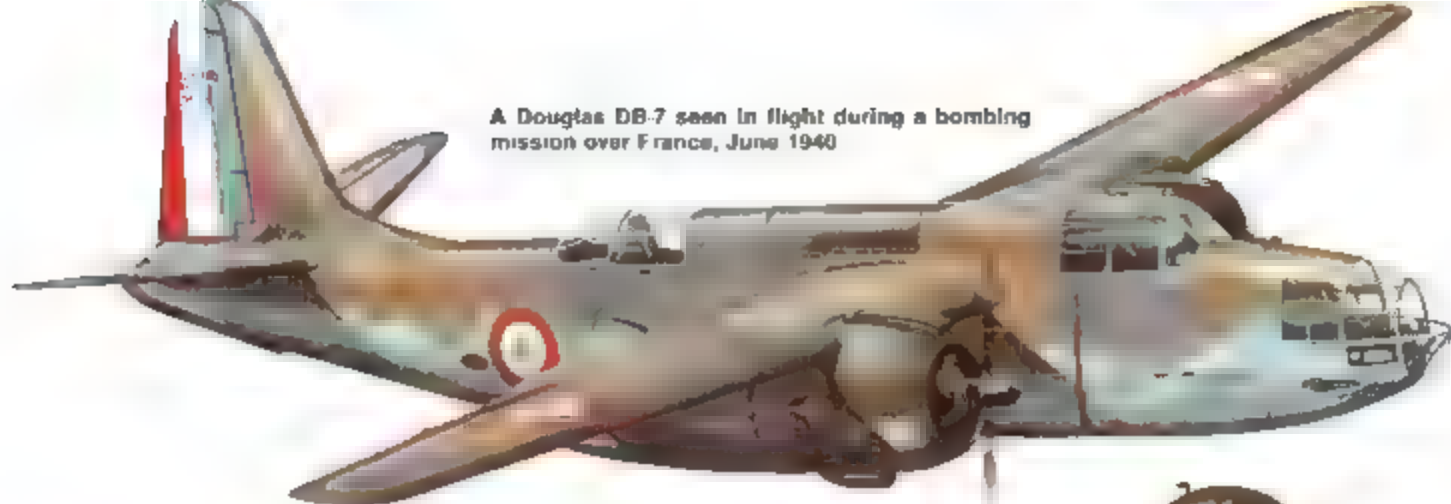
Another Boston III from No. 107 Squadron finished in a night bomber scheme. Note the washed out Type B roundels on the wings and the replacement Type C markings of the fuselage side. The call letters "OM" are in red. (N.A.S.M.)



(Above) An A 20C from the first American production order prepares for a takeoff against a German target in North Africa. Note the U S serial number still on the tail. (Scutts)

(Below) This Boston III flew with either No 12 or No 24 Squadron of the South African Air Force in the North African campaign. In their early missions these two units often flew without escort and suffered heavy losses. (Scutts)



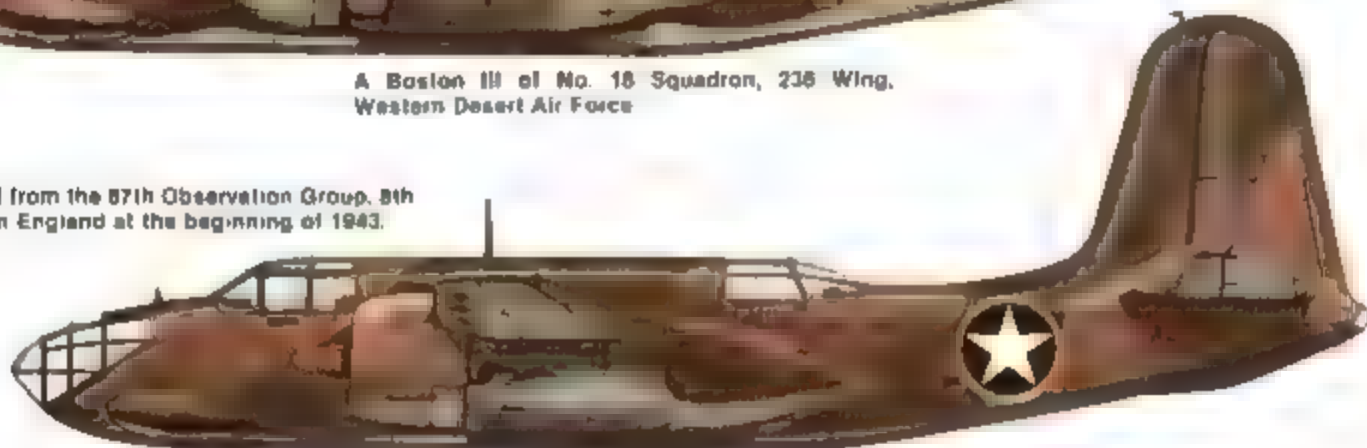


A Douglas DB-7 seen in flight during a bombing mission over France, June 1940

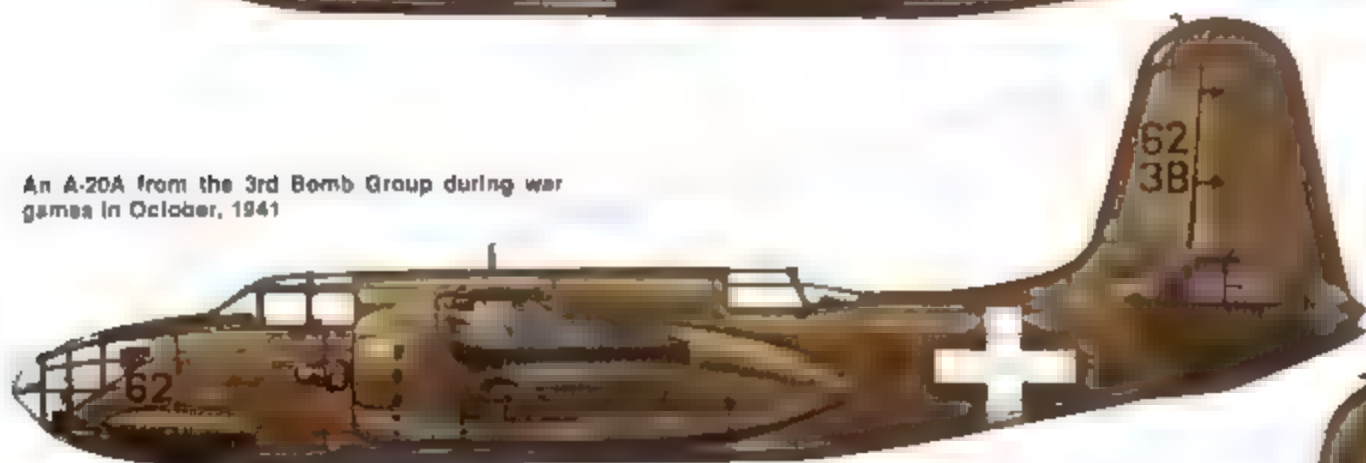


A Boston III of No. 18 Squadron, 238 Wing, Western Desert Air Force

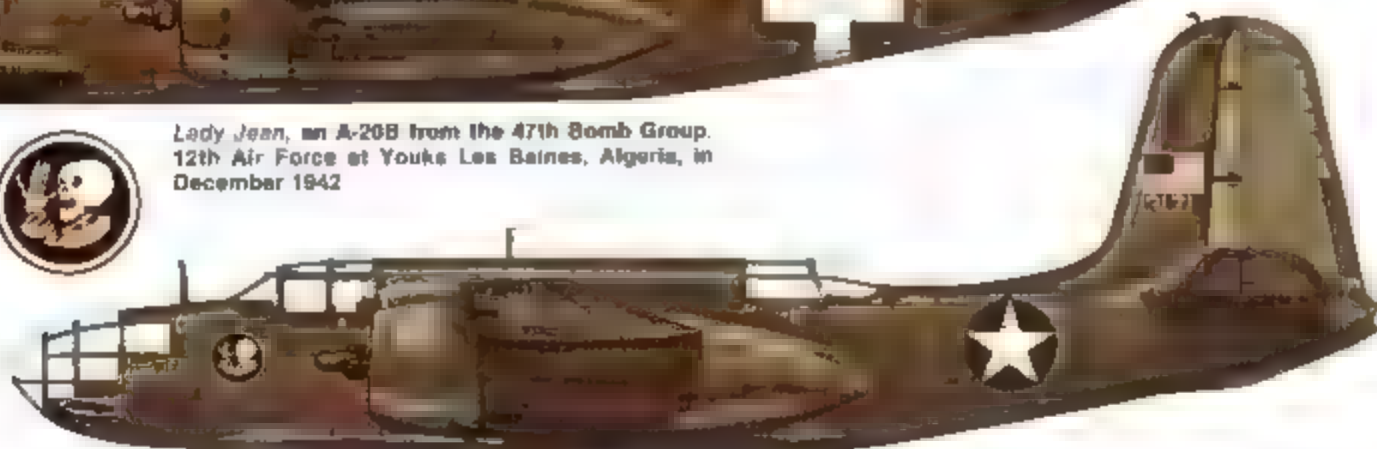
A Boston III from the 87th Observation Group, 8th Air Force, in England at the beginning of 1943.



An A-20A from the 3rd Bomb Group during war games in October, 1941



Lady Jean, an A-20B from the 47th Bomb Group, 12th Air Force at Youks Les Baines, Algeria, in December 1942





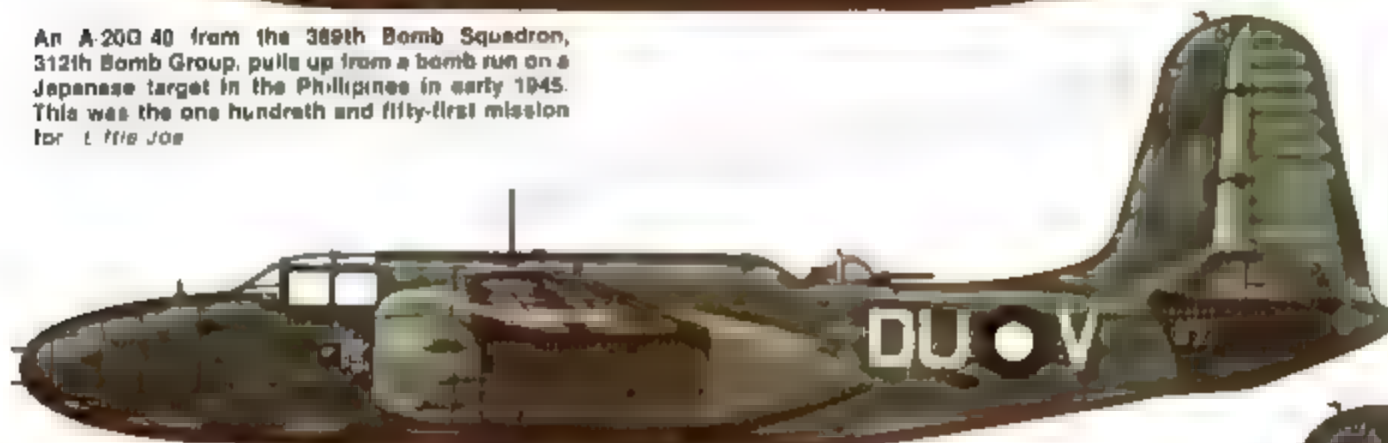
My Joy, an A-20G from the 674th Bomb Squadron (The Wolfpack) of the 417th Bomb Group (The Skylanders) at Noemfoor in the summer of 1944.



PILOT LT JONES
CO-PILOT DOBSON-K



An A-20G 40 from the 389th Bomb Squadron, 312th Bomb Group, pulls up from a bomb run on a Japanese target in the Philippines in early 1945. This was the one hundredth and fifty-first mission for *Little Joe*.

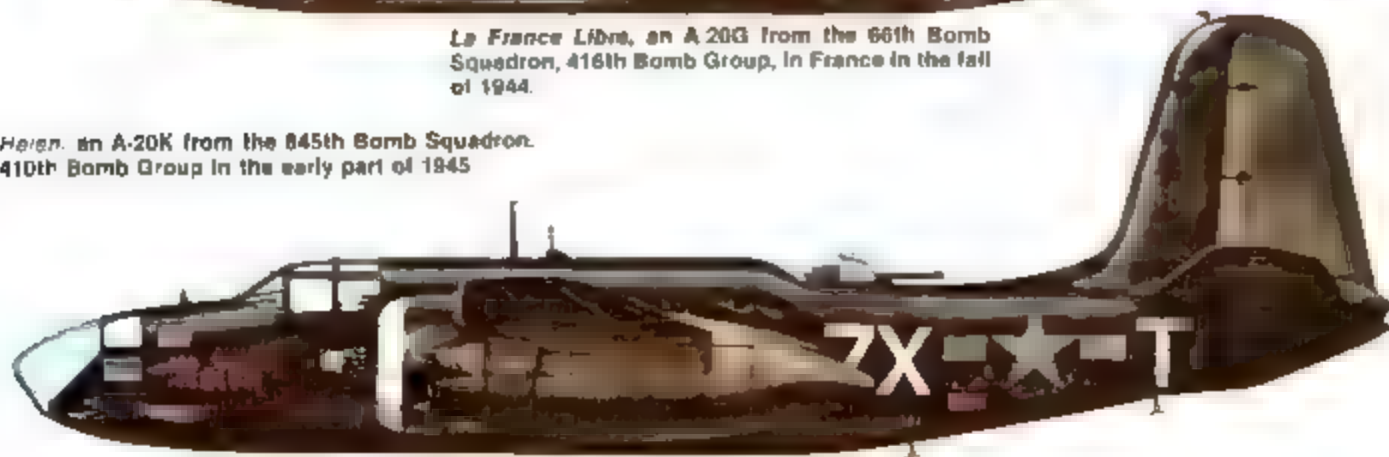


An A-20G from No. 22 Squadron, RAAF at Kamiri, Noemfoor, in 1944.



La France Libre, an A-20G from the 66th Bomb Squadron, 416th Bomb Group, in France in the fall of 1944.

Heisen, an A-20K from the 845th Bomb Squadron, 410th Bomb Group in the early part of 1945





Russian A-20Bs await pilots to fly them from the staging airfield at Abadan, Iran. In the background are AT-6s, P-40s, and more A-20s. (USAF)

A-20G

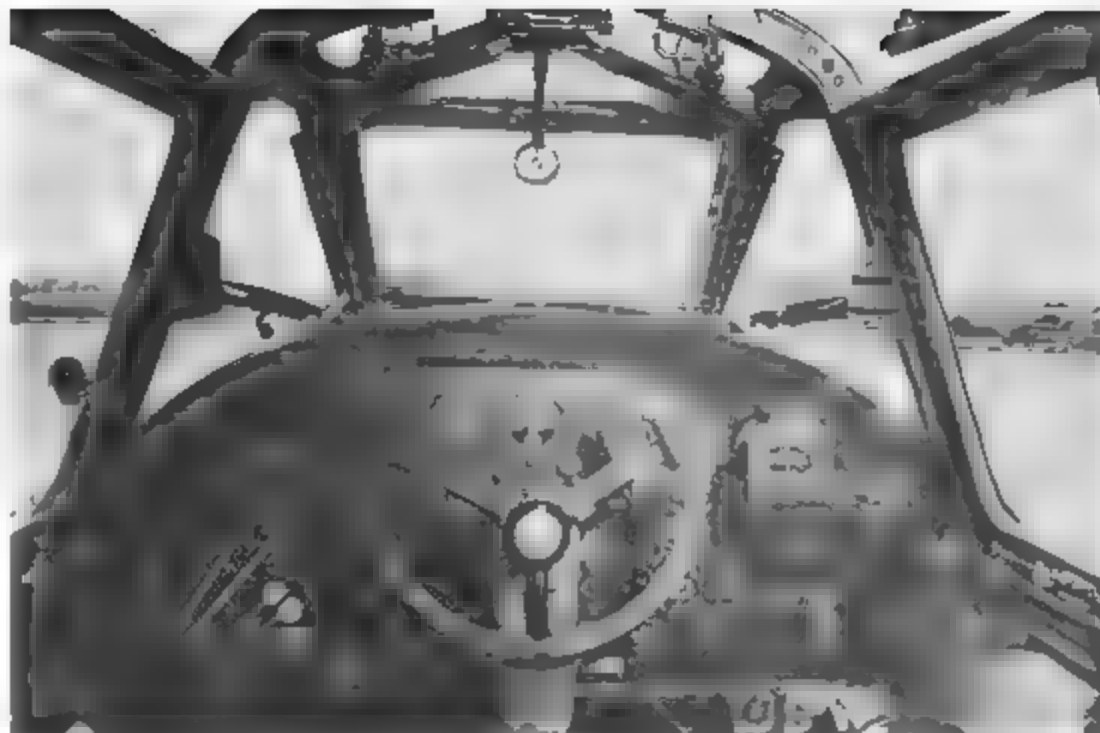
There was no A-20 D, and the A-20 E and F were minor experiments with the basic A-20A airframe. In the E version a few A-20As were fitted with the Wright R-2600-11 engines to test general performance. The F had a 37mm cannon installed in the nose, along with upper and lower General Electric power turrets fitted in the rear. Neither of these experiments went beyond testing and trial stages, so neither offered appreciable advancement over previous models.

The next production version was the A-20G. This model was produced in far greater numbers than any other, with 2,850 eventually rolling off the Douglas Santa Monica assembly line. This was the first bomber model to have a solid nose fitted, which resulted in a slight increase in overall length. The initial nose armament comprised four 20mm cannons and two .50 caliber machine guns. However, due to jamming problems the cannons were deleted in subsequent production blocks, and four additional .50 caliber machine guns were substituted in their place. Since the .50 was the standard U.S. aircraft machine gun, due to its reliability and effectiveness, the decision to use it in lieu of the 20mm cannons simplified future supply and maintenance needs for the A-20G. Most of the 20mm versions were given to the Russians under lend-lease.

In the initial G design the rear defense still comprised a single flexible machine gun. In the same production block where the cannon armament was deleted, a Martin turret mounting a pair of .50 caliber machine guns was added for rear defense. To accommodate the turret unit the rear fuselage had to be widened by six inches and made the rearward defense far more lethal than the old system. In addition, the lower flexible turret gun was also changed to a .50 caliber weapon which further simplified supply and ammunition requirements in the field.

The widening of the fuselage also resulted in strengthening the basic structure and in trials it was found that the standard 2,000 pound bomb load could now be safely doubled. Two additional 70 gallon fuel tanks were also added to the bomb bay which increased the aircraft's range to 1,100 miles. Other internal changes such as thicker armor, better navigation equipment and improved bombing systems raised the maximum combat weight to 27,000 pounds. To compensate for this, the G was fitted with Wright R-2600-23 engines. Even with these more powerful engines the additional weight caused the top speed to drop to 339 mph, but the new features more than compensated for this slight drop in speed.

An early A-20G from the first production block. The aircraft is fitted with four 20mm cannons in the nose but these did not prove successful and were dropped from later production models. These first A-20Gs did not have the turret fitted in place of the open gunner's compartment. Most of these early G models were transferred to the Russians. (Collect Air Photos)



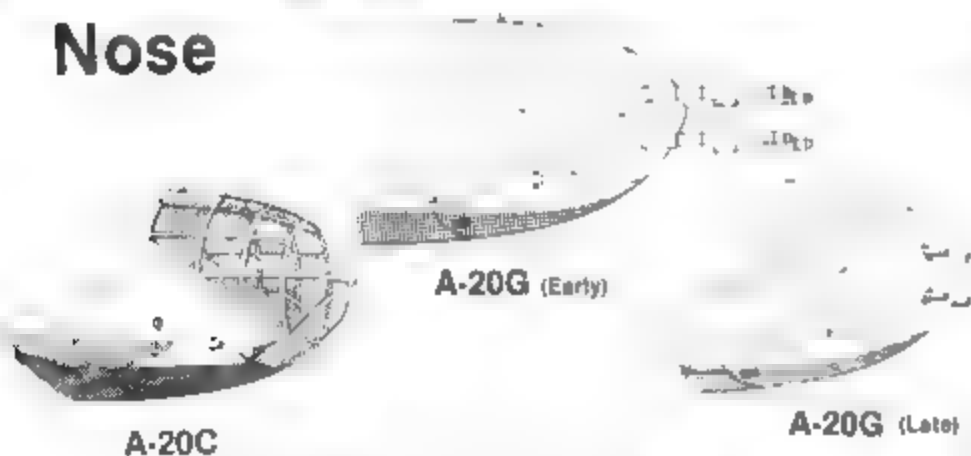
Cockpit of an A-20G 15. Gunsight can be seen above the instrument panel and the firing button is the round projection on the top of the control column. The cockpit of the A-20 was very roomy for an average size pilot. (USAF)

Good view of the pilot's entry hatch on an A-20G 35 from the 668th Bomb Squadron. Item behind cockpit marked with No Step is a life raft. (Morrow via 668th B.S./ Martin)





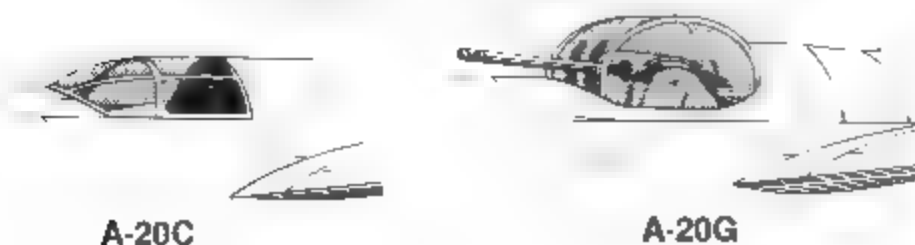
Nose



Two A-20Gs have their engines tested while being readied for assignment to one of the three groups equipped with the Havoc. Since the A-20 did not have range to be ferried to England, the planes were shipped as deck cargo. This caused a great deal of delay in getting the type into action. (USAF)

This A-20G is from the dash 20 production block. The G series was the first production model to have a power operated turret in the rear. This proved far more effective than the old style hand held armament. (USAF)

Rear Armament



A-20J

Following the introduction of the A-20G into service the Army found that it still needed a version which could carry a bombardier and full navigation facilities to fly *lead ship*. In Europe the common tactic was to bomb on the *lead ship* in the formation. To meet this requirement Douglas took an A-20G off the assembly line and removed the solid nose. In its place they installed a frameless transparent nose which was slightly longer than the solid one and equipped it with all the bombing and navigation gear required by the Army. The lead bomber began to reach combat units in late 1943. Other than these changes in the nose the aircraft was identical to the G model but in this guise received the designation A-20J. Total production reached 450 machines and 165 of these were sent to the British where they were designated Boston IVs. These glass nosed models were incorporated with regular flights of A-20Gs and it became a common sight in European skies to see a single A-20J leading a section or flight of its solid nosed brothers.

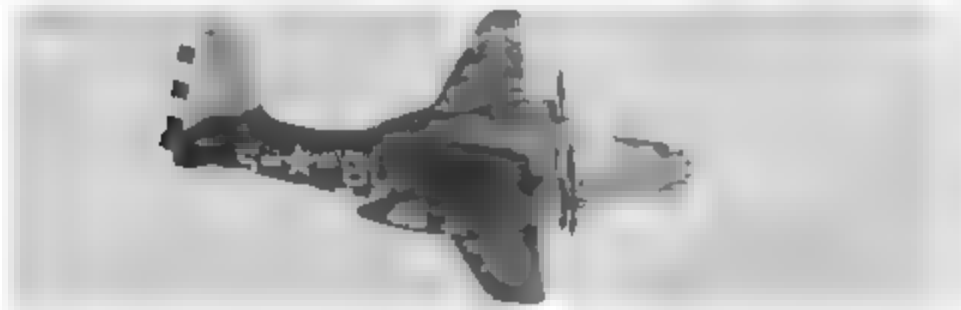


A-20G



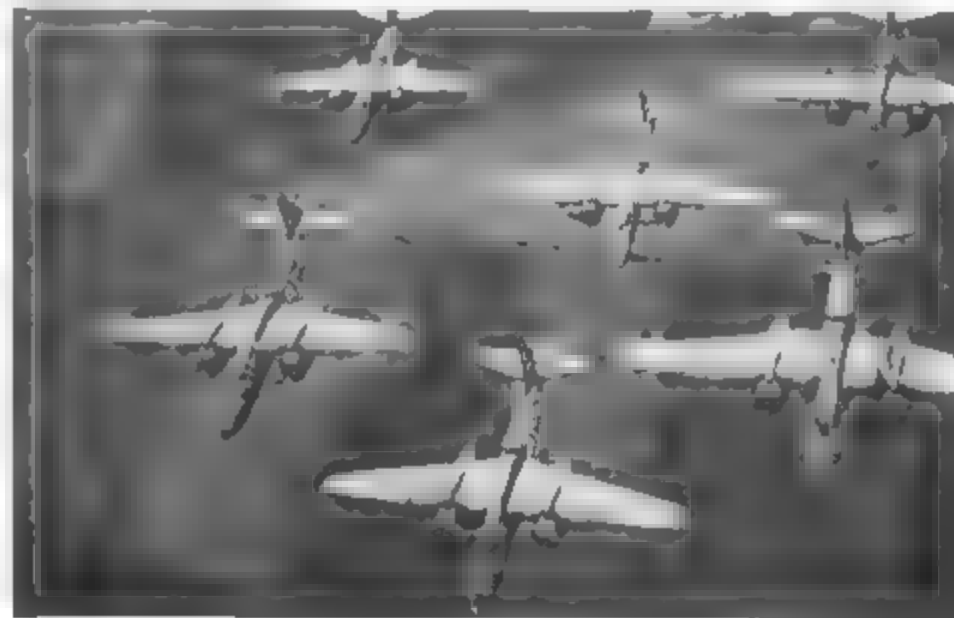
A-20J

(Below) The same A-20J of the 846th Bomb Group seen three months apart. *Irene* in the upper photo is shown just after D Day three months later the invasion stripes have started to fade, squadron colors have been applied to the engine cowlings and the newly applied bathing beauty is called *The Reel McCoy*. (USAF)



Head on view of the clear nose of an A-20J. To make room for the bombardier the top four .50 caliber machine guns in the nose were removed and replaced by various controls and a bomb sight. The lower two machine guns were retained but rarely used. (USAF)

A formation of A-20Gs are led by a solitary glass nosed A-20J. The normal procedure was for their operator turret in the rear. This proved far more effective than the old style hand held armament. (USAF)



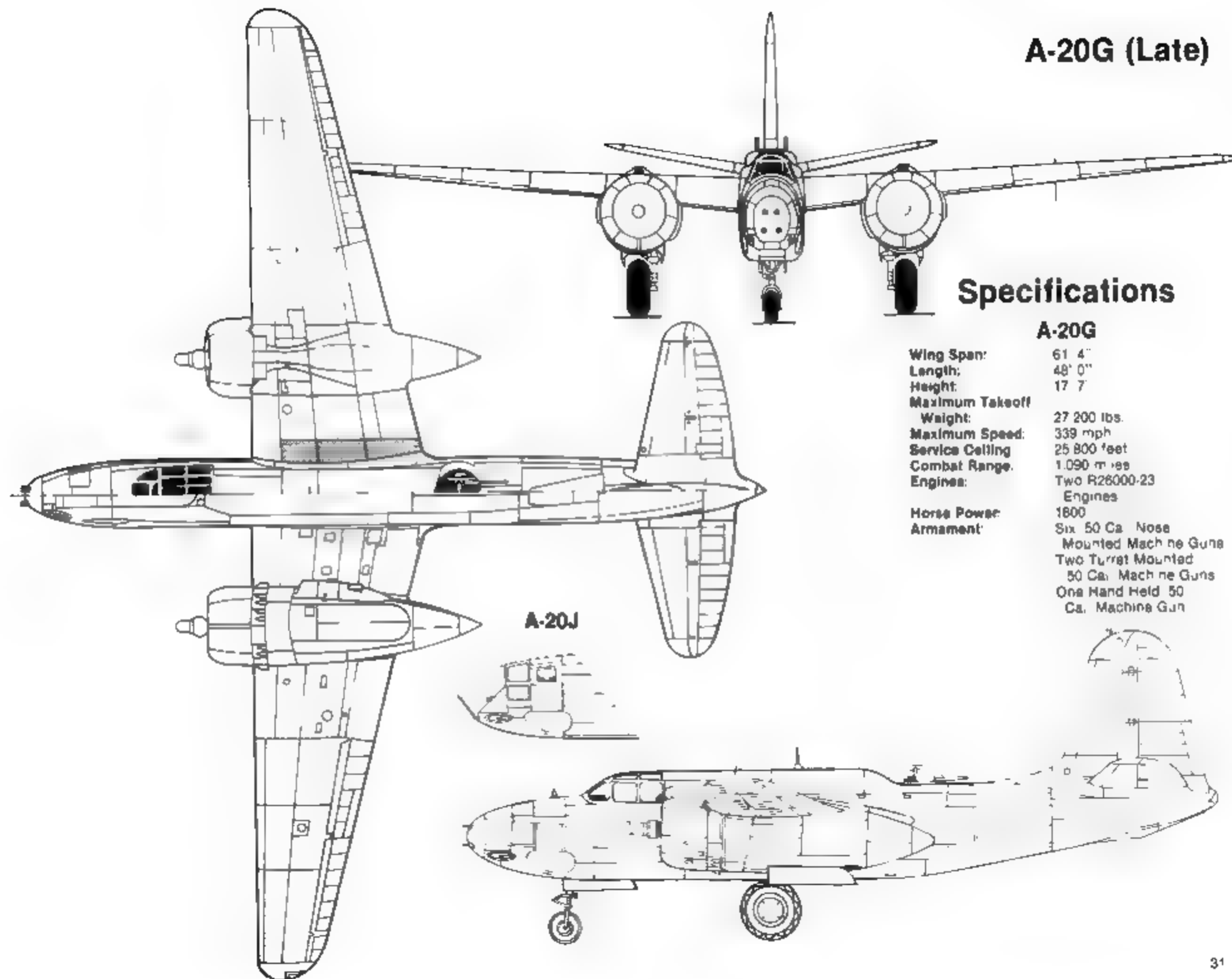
A-20G (Late)

Specifications

A-20G

Wing Span:	61' 4"
Length:	48' 0"
Height:	17' 7"
Maximum Takeoff Weight:	27 200 lbs.
Maximum Speed:	339 mph
Service Ceiling:	25 800 feet
Combat Range:	1 090 miles
Engines:	Two R2600-23 Engines
Horse Power:	1800
Armament:	Six 50 Cal. Nose Mounted Machine Guns Two Turret Mounted 50 Cal. Machine Guns One Hand Held 50 Cal. Machine Gun

A-20J



A-20H/A-20K

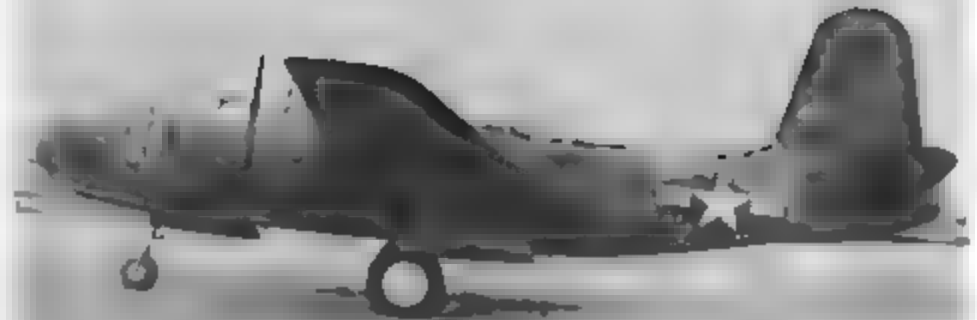
The A-20 H and K models resulted from the incorporation of a variety of minor improvements into the basic A-20G. Outwardly there were no changes which could distinguish these two models from the A-20G or J. The H was the solid nosed version and corresponded to the A-20G while the K had the bombardier's nose similar to the A-20 J. The only major change was in the engines. The Wright R-2300-23 was replaced with an upgraded power plant, the R-2300-29, which resulted in a slight increase in speed. A total of 412 A-20Hs and 413 A-20Ks were eventually produced. The British received 90 of the K models which were given the designation Boston V. From this group eleven were later transferred to the Royal Canadian Air Force.

One rather unusual modification was tried with at least one A-20H. A caterpillar track landing gear was fitted to the main undercarriage to see how it operated in snow, mud and sand. Though the tests were successful the design was not developed further since the need to operate under such conditions did not materialize. For this experiment the plane was given the designation TA-20H.

Aside from some internal changes of a minor nature the only real difference between the A-20J and this A-20H was a slight increase in engine power. This particular aircraft is the second production H model. (USAF)

(Below right) An A-20H fitted with a tracked undercarriage to test the possible use of the device in snow, sand, and mud. Aircraft was designated TA-20H. (USAF)

As in the A-20G/J series, the A-20K was the glass nosed version of the A-20H. (Beckecker via AAHS)



War Over Europe

After the initial use of the A-20 by the 15th Bomb Squadron in 1942, nearly two years passed before American A-20s again operated from British airfields. In early 1944, three new A-20 groups were sent to strengthen the 9th Air Force which had recently transferred to England from the Mediterranean. The 9th was to be the tactical air force for the upcoming invasion of Europe, **Operation Overlord**, set for the spring or summer of 1944.

Upon their arrival, the three A-20 groups, the 409th, 410th, and 416th, were assigned to IX Bomber Command and were equipped with both clear and solid nosed A-20s. Most of the missions were flown at medium altitude and the usual procedure was for the clear nosed A-20s and Ks to fly lead, upon a signal from the lead ship the solid nosed A-20Gs and Hs would release their bombs on the target area. These tactics were necessary since low level strikes were extremely costly due to the intense, accurate German anti-aircraft fire. Although the medium altitude at which the A-20s operated caused a decline in accuracy, the resultant lower casualty rate more than offset this accuracy loss.

Throughout the winter and spring of 1944, the three A-20 units helped soften up the invasion front. The primary targets were German coastal positions, airfields, and lines of communications. In particular, the strikes against the communications lines were extremely vital, cutting off the invasion area from reinforcements and supplies. To this end, the A-20s flew countless sorties against bridges, railroad marshaling yards, canals, and any type of traffic such as trucks, trains, or barges. By the time D-Day came, it was nearly impossible for the Germans to move men or equipment to the invasion area.

During this period, the A-20s had also been employed to destroy the German V-1 rocket sites which were pounding English cities. These sites were difficult to hit because of their small size, extensive camouflage, and anti-aircraft defenses. The Havoc proved ideal for coming in at low level to hit these sites, but many aircraft were lost to the intense ground fire. Despite the destruction of numerous sites, the Germans continued to operate the V-1s until their positions were overrun by Allied ground forces.

After the initial success of the Normandy invasion, the A-20s flew constantly in support of Allied ground units as they tried to break out of the beachhead. Finally, after a number of reversals, the Americans were able to open a hole in the German lines near St. Lo. Through this gap, the 3rd Army under General Patton poured through, turning the German flank. In their headlong rush across France, the 3rd Army received constant air support

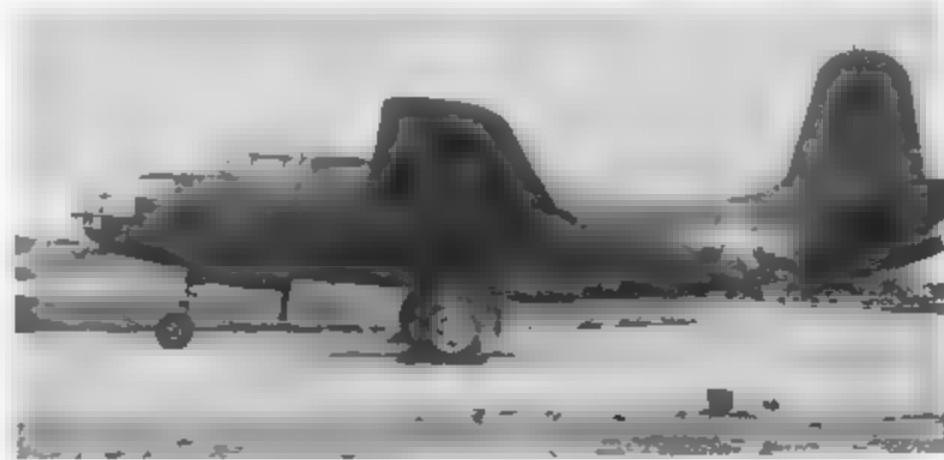
from the three A-20 units. The A-20s constantly attacked retreating German columns, supply concentrations, roadblocks, and defensive positions. As the Allies encircled surviving Germans in the Falaise pocket, the 416th Bomb Group carried out a number of costly missions against targets in the area. In recognition of their valor, the 416th received a Distinguished Unit Citation for this action.

With the Germans pushed out of France, the three A-20 groups moved to airfields in France during late summer. Some of these fields were the same ones which they had only weeks before been bombing. As the front stabilized on the German/French border, the A-20 units hit German defenses along the Siegfried Line. The 416th Bomb Group also helped support the aborted airborne assault in Holland and during September, which saw the British 1st Airborne Division destroyed at Arnhem.

As summer turned into fall, a new plane arrived in Europe which spelled the end of the A-20s days over the continent. Fittingly, the A-20s replacement was another Douglas product, the magnificent A-26 invader. The first group to receive the new ship was the 416th. In November of 1944, shortly thereafter, the 409th began converting, but before this conversion was completed, the Germans launched the final offensive of the war. The attack launched through the Ardennes Forest on 16 December 1944, became known as the Battle of the Bulge. This was the same area through which the Germans had attacked the French in 1940. And as in 1940, the A-20 was again called upon to help stem the tide. In this, the final major battle against the Germans, the Havoc proved instrumental in stalling the German attack. As they had done two years before at Kasserine Pass, the A-20 came in low to hit the advancing Nazi armor. The 410th Bomb Group did an outstanding job in these missions despite horrendous weather conditions. Over the three-day period of December 23rd-26th, the unit carried out five major attacks against enemy motorized columns and supporting installations in the face of vicious ground forces and aerial opposition. Along with four other groups, the 410th received a Distinguished Unit Citation for these missions which did much to knock the steam out of the final Nazi attack.

By mid-January of 1945, the Allies had pushed the German counter-offensive back to its starting line. By then, only the 410th Bomb Group was still equipped with the A-20s; once sufficient A-26s were now available to equip the other groups. As the war began to reach its final climax, the 410th began operating at night in conjunction with B-26s and A-26s. The A-20s bombed German supply and communication lines in the late winter and early spring, and while the results were not spectacular, these missions did serve to keep the pressure on the enemy around the clock. In the spring, the group began to retrain on the invader, but before they could fly any missions, the war ended.

This A-20B was apparently used as a utility aircraft by a bomber unit, possibly the 379th Bomb Group of the 8th Air Force. A number of the older A-20s were used for such duties by various bomber and fighter outfits. (Bowen via AAFHS)





A formation of A-20Js drop their bomb through the overcast onto enemy positions in France just prior to D-Day. Aircraft are from the 644th Bomb Squadron of the 410th Bomb Group. (USAF)

(Above left) These A-20Bs are preparing to takeoff from Isleay Airfield in southern England. The planes are believed to be from the 2911th Bomb Squadron of the 57th Tactical Reconnaissance Group. This unit operated A-20Bs fitted with cameras for a short period of time. (Ludvik Klimek via Squadron Archives)

An A-20G from the 409th Bomb Group returns to its English base after a mission over France. The code 7G on the fuselage indicates that this aircraft is from the 641st Squadron. (USAF)



A-20Gs from the 88th and 671st Bomb Groups are led by an A-20J across the French coast near Le Havre. Planes are marked with White and Black Invasion stripes. (USAF)



(Above Right) An A-20 just before it releases its bomb load. The open hatch (behind the bomb bay) is the position for the hand-held lower machine gun. (Klochsin via AAHS)



This Boston III *Idiot's Delight*, was acquired by the 379th Bomb Group for use as a hack aircraft. It was very unusual to see this type of aircraft in a natural metal finish. Photo was taken shortly after D-Day. (USAF)



The nose wheel of this A-20G buckled upon landing which caused the nose to literally cave in. This was quite common if the gear gave way while the plane was landing. (USAF)

A-20G Landing Gear



(Above right) The checkered pattern on the tail of this A-20G is very unusual since none of the A-20 groups in England used this type of marking system. Photo was taken around the time of D-Day at Gosfield. Since this was the home of the 410th Bomb Group, the plane may be from that unit and the checker could be personal markings. (Wiley)

Butch, a shark mouthed A-20G from the 410th Bomb Group, just after returning from its seventeenth mission over France. The use of such a large shark's mouth was uncommon in the European theater of operation. (USAF)



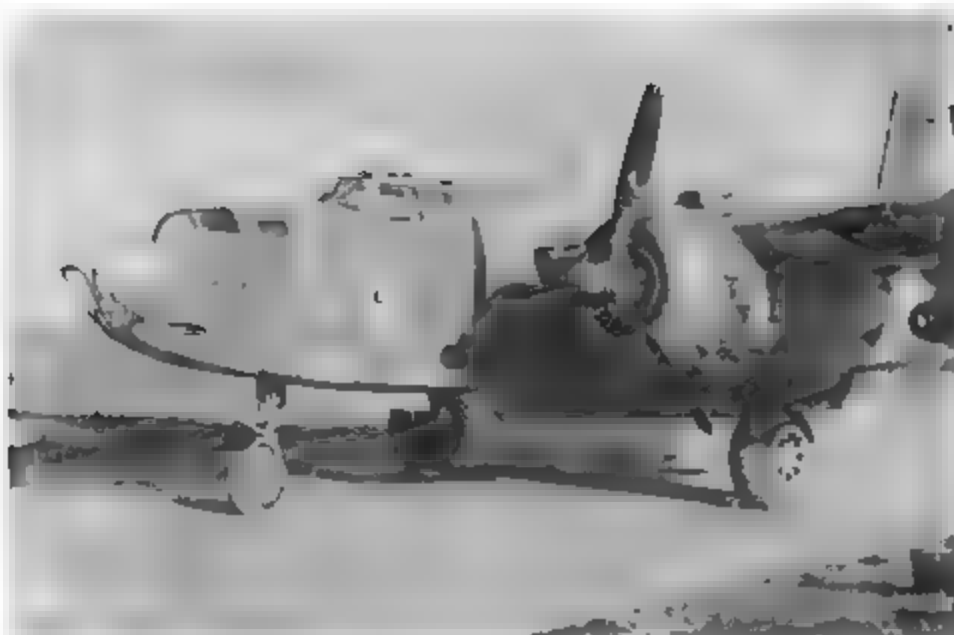


This A-20J-10 is being prepared for a mission by a ground crew from the 410th Bomb Group. At this time in her career *Eve Mae* had completed forty three missions. Notice how the leading edge of the wing by the fuselage has been worn down to bare metal from constantly being slid over by the crew and ground personnel. (USAF)



(Above left) *Margaret Marie*, a veteran of thirty one missions, sits forlornly at the end of the runway after a crash on July 15th, 1944. The aircraft is an A-20G-30 from the 645th Bomb Squadron of the 410th Bomb Group. (USAF)

Queen Julie in the Black and White tail markings of the 410th Bomb Group on her way to a target in the Falaise area. Upper invasion stripes have been removed to render the aircraft less conspicuous to German fighters. (USAF)



This A-20J from the 544th Squadron of the 419th Bomb Group carries an unusual piece of artwork: a young boy in a flying helmet. Perhaps Bill was the small son of the pilot. (USAF)

Two days later Bill came to grief at an airfield in France. From the condition of the plane it appears that the crew survived the landing, although the holes in the rear may have proved fatal for the turret gunner. (USAF)



This A-20G was the first Havoc to complete one hundred missions over occupied Europe. It was then renamed *La France Libre* in a ceremony at Le Bourget Field outside of Paris. (USAF)

La France Libre takes off from a field in France. The plane belonged to the 419th Bomb Group. Its eventual fate is not known. (USAF)





Zombie made it back to its base in France despite severe damage. The A-20 was well liked for its ability to take a great deal of battle damage and still bring the crew home safely (USAF)

The white stripe on the tail of this A-20G-25 indicates that the plane belongs to the 418th Bomb Group. The code 5H was used by the 868th Squadron of that unit. (USAF)



This A-20B from the 47th Bomb Group was pressed into service as a fuel carrier. It would fly to a base where all fuel except for the amount needed to return to its base was siphoned off. Using this technique aircraft could begin operating out of captured bases as soon as the runway was repaired and ground personnel flown in. (USAF)

This all-black A-20K from the 645th Bomb Squadron was used for night bombing when the 410th Bomb Group switched its roles. The replacement rudder is still in the standard day camouflage scheme. The name *Helen* is in Red with Yellow trim while the cowling front is white. (USAF)



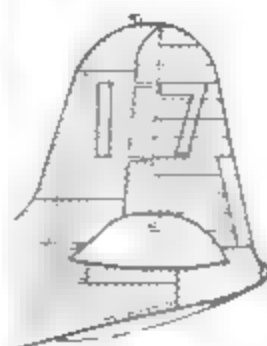
Maxine, an A 20J-10 from the 648th Bomb Squadron of the 410th Bomb Group. This aircraft was later lost in action. The color on the cowling is Blue. (USAF)





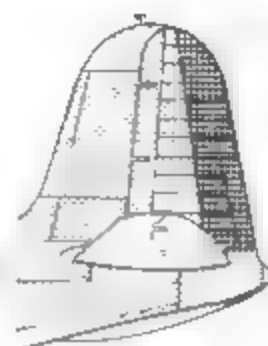
An A-20K from the 646th Bomb Group completes its run on a target near the German border. Notice how the wing insignia has been dulled to reduce its glare in the bright sunlight and render it less conspicuous to German fighters. (USAF)

A-20 Markings Europe



47th

1-24 84 BS
25-49 85 BS
50-74 86 BS



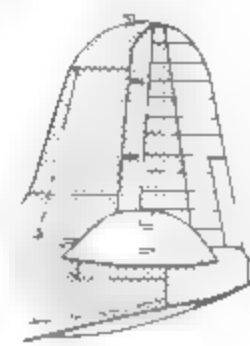
409th

75-99 87 BS
640-W5 BS
641-7G BS
642-D6 BS
643-5I BS



410th

644-5D BS
645-7X BS
646-8U BS
647-6Q BS



416th

668-5H BS
669-2A BS
670-F6 BS
671-5C BS



Japan: The Second Round

It was not until the latter part of 1943 that the newer models of the A-20 began to arrive in the Pacific. Up until this time the only versions which had been service had been a small number of the early A-20As and A-20Cs. But there had only been enough available to equip one squadron of the 3rd Bomb Group which was assigned to the 5th Air Force.

However, with the increase in A-20 production sufficient numbers of the newer A-20G and H models became available to equip three bomb groups. The 3rd Bomb Group began to convert to the new variants in late 1943 and were fully converted by the end of January 1944. Close on their heels came the 312th Bomb Group, a P-40 unit, which began converting in February. The final unit to receive the A-20 was the 417th Bomb Group which had trained on the aircraft during the latter part of 1943. In January the unit deployed to the Southwest Pacific where it was assigned to General George Kenney's 5th Air Force.

Unlike their European counterparts, A-20 units in the Pacific were used primarily in the low level role. This was due to the fact that the Japanese anti-aircraft defenses were nowhere near as dense as the German ones in Europe, which made it possible to operate at lower levels without exposing the crews to unacceptable losses. In addition, many of the Japanese targets were extremely well camouflaged and could only be spotted by aircraft operating just above tree top level. Along with the North American B-25, the Douglas A-20 proved to be an ideal weapon in this role. With its heavy nose armament, maneuverability, bomb load, and speed the A-20 could hit a target with a swift, deadly attack and be gone before the Japanese could react.

Using these tactics the three units began in early 1944 to hit Japanese positions in New Guinea, Palau, and the approaches to the Philippines. Throughout the spring and summer of 1944, havoc struck at Japanese shipping, airfields, and supply dumps. They were particularly effective against airfields where their six nose guns destroyed any Japanese aircraft they found on the ground. Against shipping the A-20s operated barely above the wave tops and skp-bombed their ordnance into the sides of Japanese destroyers and merchantmen with devastating results. By the end of the summer the enemy was reeling from blows such as these. In October 1944 the United States invaded Leyte in the Philippines. The American goal was to establish a series of airbases from which, and based on aircraft could support the liberation of the remaining islands in the archipelago. Once this was complete, the aircraft would then begin isolating Japan from her sources of raw materials.

As these airfields were developed the A-20s moved up from their New Guinea bases. From these fields the three bomb groups carried out attacks against the remaining Japanese positions in the Philippines and aided army troops against dug in Japanese troops. During the course of these actions the enemy tried to rush in reinforcements to counter the U.S. drive. In December a number of convoys tried to run the gauntlet of Allied firepower in Lingayen Gulf to bring in critically needed troops and supplies. The 417th was involved in a number of low level strikes against these convoys. In the face of dense anti-aircraft fire A-20 crews flew numerous sorties against these resupply efforts. Though some ships managed to slip through, most were either sunk or forced to retire. In recognition of its valor during these dangerous missions, the 417th received a Distinguished Unit Citation.

Once the Philippines were secure the A-20s turned their attention toward Japanese shipping along the Chinese coast and industrial targets in Formosa. Throughout the spring and early summer of 1945 all three groups took part in a massive series effort to cut the Japanese home islands off from their various sources of raw or refined materials. What little merchant shipping the Japanese had left was either sunk or forced into hiding. On Formosa an intense campaign was carried out against oil refineries, sugar mills, alcohol processing plants, power installations, and port facilities. By mid-summer the flow of supplies from Formosa was almost totally dried up. During the attacks on these installations the A-20s ran into a heavy concentration of ground fire and occasional fighter interception. In particular the 312th Bomb Group ran into heavy opposition in a series of attacks



This A-20G-10 carries the tail markings of the 3rd Bomb Group. The -10 production block did not carry the power operated turret which was introduced on the later G series. (Swein)

This 90th Bomb Group A-20G sits off to the side of the airstrip at Saldor, New Guinea, after the collapse of the nose gear. The P-47s in the background are probably from the 348th Fighter Group. (USAF)



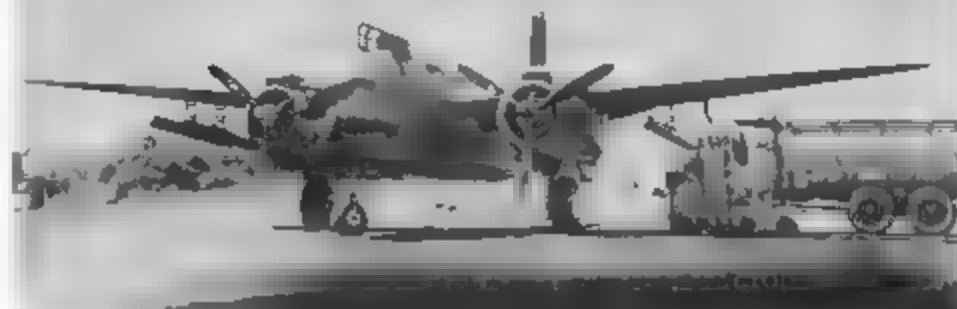
on a complex of butanal processing plants. Over an eleven day period the group carried out eight attacks in the face of intense anti-aircraft fire. As a result of these missions the production at the complex was almost totally stopped. For these eight attacks carried out in the face of determined enemy ground fire, the 5th Air Force awarded the 312th a Distinguished Unit Citation.

While these missions were being carried out, plans were being made to convert two of the groups to other aircraft. In June, one squadron of the 312th Bomb Group, the 388th, began converting to the Consolidated B-32, a four-engine heavy bomber. The other three squadrons were also slated for the change-over but before this was implemented the war ended. The 3rd Bomb Group began converting to the Douglas A-26 in June and by July the process was completed. Interestingly enough, the 13th Bomb Squadron of this group had field tested the A-26 a year earlier in New Guinea but had not liked the aircraft. As a result of their evaluation, changes had been incorporated in the A-26 before the plane's large-scale introduction into various theaters of operation. The unit immediately began flying missions and in August moved from its Philippine bases on Okinawa. The other bomb group, the 417th, kept the A-20 and moved up to Okinawa in August. The use of the atomic bomb against Hiroshima and Nagasaki in the same month effectively ended the war before the group could fly missions against the Japanese mainland.

Ground crewmen from the 312th Bomb Group service the lower nose guns of one of the group's A-20s. The skull around the nose guns was common to a number of planes in this group. The plugs in the barrels are to keep out moisture and dirt. (USAF)



One of the few A-20Gs with four 20MM cannon in the nose to see service with the Army Air Force. The rocket tubes under the wings were a field installation tried out by the 90th Bomb Group in late 1943 and early 1944. Wind resistance to the tubes was found to cut both the Havoc's range and speed, and were subsequently dropped. (USAF)



You can't get much closer to the target than this! This A-20 had just skipped four bombs into the side of a Japanese freighter when this picture was snapped. In pulling up, the pilot clipped the freighter's mast with his wing and crashed a few hundred yards away from his target. He survived and was later picked up by a PB4Y Catalina. The gunner didn't make it out of the plane. (USAF)





Eloise, another A-20 from the 312th Bomb Group adorned with the skull and cross bones on the nose. The 312th later became the only group to fly the B-32 in combat. (USAF)



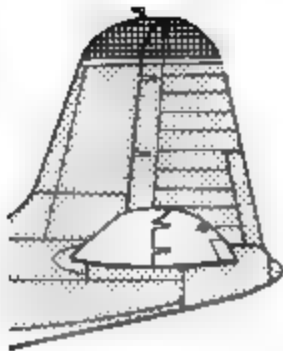
Most A-20s carried rather subdued nose art. There were exceptions, of course, as this aircraft from the 3rd Bomb Group shows. Mom and apple pie were not all this pilot thought about. (Swain)

A lineup of A-20G's from the 312th Bomb Group at Floridabranche Airstrip of Luzon in the Philip nes. The spade emblem all of the fuselage insignia was used by the 389th Bomb Squadron. (USAF)

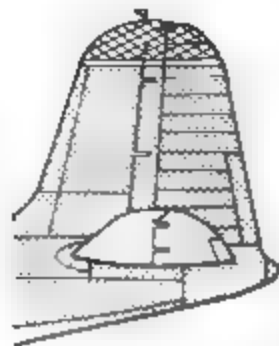


PACIFIC Tail Markings

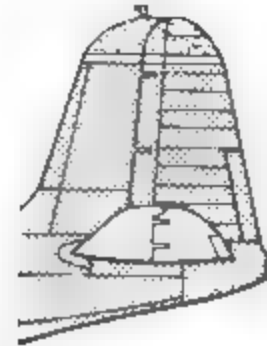
8th BS



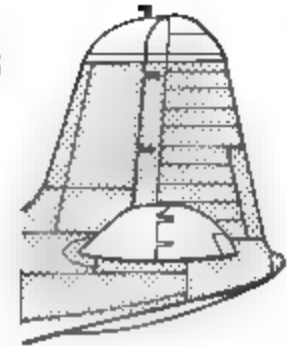
13th BS



89th BS

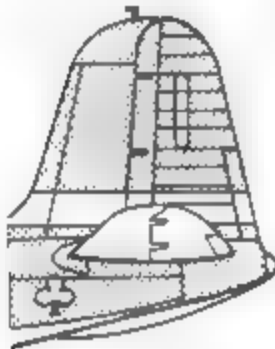


90th BS

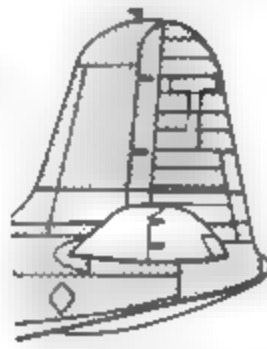


3rd Bomb Group

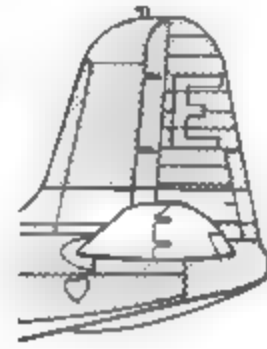
386th BS



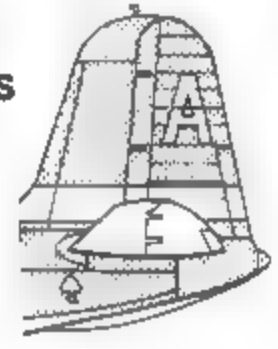
387th BS



388th BS

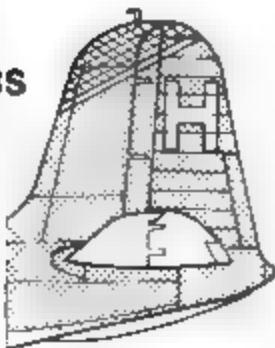


389th BS

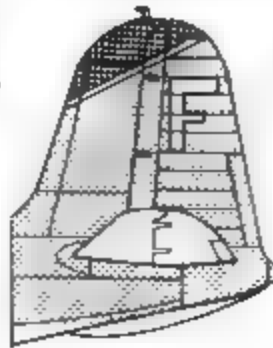


312th Bomb Group

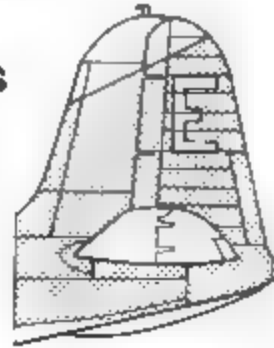
672nd BS



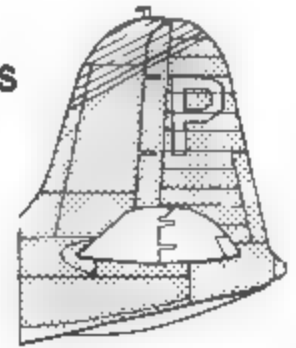
673rd BS



674th BS



675th BS



417th Bomb Group

Allied Havocs

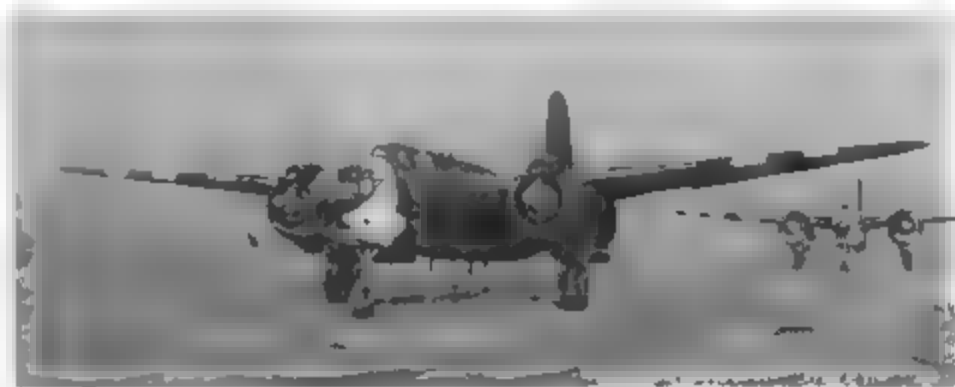
The British did not use the later models of the A 20 as extensively as they had earlier ones. Some of their light bomber units converted to the North American B-25 or the DeHavilland Mosquito. Following the Allied victory in North Africa, Bostons were employed against the various islands around Italy and targets on the mainland in preparation for the upcoming invasion. With the capture of Sicily and the successful invasion of Salerno the Bostons moved to airfields in lower Italy. No. 12 and No. 24 Squadrons eventually replaced their Bostons with Martin B-26 Marauders but two British squadrons, No. 18 and No. 114, converted to Bostons during the spring of 1943. From here they flew missions in support of the British Eighth Army. In late 1944 all four Boston Squadrons were formed into the 232nd Wing* and began replacing their older Boston IIIs with the newer Boston IV or V. From this point on the units were mainly used in night bombing against German positions and communications lines in northern Italy. Normal procedure was for one aircraft to mark a target with flares while the other aircraft bombed at set intervals. Experiments were also carried out with somewhat elementary radar bombing. By the spring of 1945 all the older Boston IIIs had been replaced by newer models. Though still employed chiefly at night, the squadrons did experiment with another bombing tactic, "timed run." Aircraft would home in on a particular beacon such as a search light, gun position, or terrain feature and then allow a certain heading for a specific time. When this time was reached, the bomb load was dropped. Though this tactic was useful against a fixed target it was of little value against moving vehicles. Both the timed run tactic and use of target marking aircraft continued until after the end of the war. After the end of hostilities Bostons were used to drop surrender leaflets to German forces still holding out in the rugged mountainous terrain, a rather unique end to their bombing career in Italy.

In Europe many of the original Boston units either disbanded or received other aircraft. By late 1943 the remaining Boston units had been formed into the 137th Wing of the 2nd Tactical Air Force, the Allied air unit responsible for supporting the planned invasion of Europe. This wing was composed of three squadrons, No. 88, 107 and 342. The latter was a unit of the Free French Air Force which had been formed in the spring of 1943 from Frenchmen who had escaped from Nazi occupied France. Throughout the period up to the invasion of France these units were employed in a similar fashion to the A 20s of the 9th Air Force. Operating a mixture of Boston IIIs and IVs, they hit German targets across the entire northern coast of France. Following the D-Day invasion the wing moved to fields in France and in late October began providing support for the Allied armies as they advanced toward Germany. During this period No. 107 was detached from the wing and replaced by No. 226 which had earlier flown the Boston but which now flew Mitchells. All through the winter of 1944-1945 and into the spring, Bostons of the wing flew countless sorties in support of the field armies. Casualties came mainly from intense ground fire, though on occasions the Luftwaffe rose to challenge the roving bombers. In April 1945, with the war almost over, No. 88 Squadron disbanded, leaving No. 342 Squadron as the only R.A.F. Boston unit in Europe. After German surrender this unit stood down too. Following the end of hostilities all Bostons delivered to the British under Lend-Lease were returned to U.S. authorities. These were stripped of any serviceable items and broken up for scrap.

These Boston IIIs from No. 88 Squadron are being prepared for a smoke laying mission over the Normandy beachhead on D-Day. (Scutts)

The same smoke laying Bostons taxi out for their mission on D-Day. The white noses were special markings for the squadron's mission over Normandy. (Scutts)

This Boston IV was flown by Flight Sergeant John Samain of No. 18 Squadron in late 1944 and early 1945. The plane at this time had one hundred and five completed missions. The serial number was BZ 105. (Beagley)



*No. 72, No. 18, (Borneo), No. 35, No. 118 (Hong Kong).

The largest user of the A-20 was the Russian Air Force. Of the 7385 A-20s built, 3125 were sent via Lend-Lease to Russia. At first they were shipped across the North Atlantic on freighters but German U-boats and aircraft sank many of the ships on the trip to Murmansk. As the Russians were in desperate need of aircraft, plans were drawn up to ferry the A-20s from the U.S. through Iran or Alaska. At these staging areas Russian pilots picked up the aircraft and completed the trip to Russia.

Unfortunately, the Russians have given out little information about how the A-20 served in their air force. In typical fashion they have chosen to laud the performance of their own indigenous aircraft while short shifting any foreign types. However, it is known that the A-20s were used extensively in the ground attack role, particularly in the battle of Stalingrad. They were also employed as torpedo bombers against German naval units in the Black and Baltic Sea. The Russian crews liked the A-20 for its speed, maneuverability, and rugged construction. The early A-20Gs with four 20mm cannons in the nose were especially useful in the ground support role. After the end of the war the A-20s were quietly phased out and ever since there has been little mention of their use in the Russian-German air war.



These A-20G-1s in Russian markings are at Ladd Field in Alaska where they await pilots to ferry them across the Bering Straits to Siberia. Most of the early A-20Gs armed with 20mm cannons were given to the Russians. (USAF)

A Russian pilot prepares to take off from Ladd Field for Siberia in an A-20G fitted with a long range ferry tank. These type of tanks could be jettisoned if the need arose. (USAF)



Members of the Lorraine squadron walk away from their Boston III after a mission against German positions along the French coastline. The men wear British uniforms but have French insignias on them. (Cuny)



A Boston IV of No. 342 Lorraine Squadron on its way to a target in France after "D-Day". Insignia below the cockpit is the crest of the Free French forces. (Scutts)

This DB-7 was one of a number which were used to reduce the German positions which had been by-passed in the move across France. These positions were mostly forts along the coastline. This particular aircraft, number 129, flew the most missions of the DB-7s used by this unit. (E.C.A.)



P-70 Night Fighter

The P-70 was a somewhat unusual conversion in that a bomber was adapted as a fighter. The original A-20 night fighters were early conversions of the DB-7 which the British designated Havoc I and II. Some of these were modified as Turbinlites with the addition of a large searchlight in the nose.

The U.S. interest in the A-20 as a night fighter came about as an interim solution until the P-61 Black Widow could be put into production. The first version was the P-70 which was an A-20 that carried British AI MK IV radar fitted in the nose. For armament it was equipped with a ventral tray of four 20mm cannons under the fuselage. The glass nose was painted over and the radar operator occupied the gunners compartment. A total of 59 were converted and most were used as trainers.

The P-70A was the next variant in the P-70 series. It was further broken down into the A-1 and A-2 models. The A-1 was an A-20C with the radar relocated to the bomb bay and rear cockpit. The cannon tray was dropped and the nose was fitted to mount either 6 or 8 .50 caliber machine guns. Eventually thirty-nine were converted. The A-2 was basically an A-20G fitted with radar but without the rear turret, and the earlier flexible machine guns in the gunner's compartment being retained. The total number converted ran to 65.

The final version was the P-70B-1 and B-2. The B-1, of which there was only one, was an A-20G mounting a SCR-720 centrimetric radar in the nose and two gun packs of three .50 caliber machine guns each mounted on the fuselage below the pilot. The B-2s were A-20Gs and Js similarly fitted with ACR-729 radar sometimes replacing the ACR-720 sets. Many were used as trainers and didn't have their gun packs fitted. Production eventually reached 105.

Operationally, the P-70 was used only in the Pacific. The 6th Fighter Squadron was the first unit to receive them, in September 1942, beginning training and operations over Hawaii. In February 1943 the unit sent two detachments to the Southwest Pacific to counter increasing Japanese night raids. Experiencing limited success, the unit found that the P-70s were too slow and could not climb quickly enough to be effective. In an effort to improve the P-70's performance, some planes in New Guinea had their armor and rear guns removed, B-17 paddle bladed props installed, and P-38 fuel booster pumps added. However, these modifications did not substantially improve the plane's performance. Eventually, converted P-38s were used for high altitude interceptions while the P-70s were restricted to low level and intruder missions.

As the night fighter training program began turning out qualified crews, these were formed into squadrons, some of which were sent to the Pacific. The 418th and 419th Night Fighter Squadrons arrived in the autumn of 1943, taking over many of the 6th's aircraft. They also received some of the newer P-70s but these were not much better than the earlier versions. The 421st Night Fighter Squadron closely followed these units and began operating out of New Guinea. The other units patrolled the Solomons area. All three units found little air activity and were used mostly in the intruder role. The 418th later switched to B-25s as a result of this. Eventually all three units turned in their mixture of P-70s for the first true U.S. night fighter, the P-61.

The P-70 was one of the least successful of A-20 models, primarily due to its speed and poor climbing ability. Very few kills were recorded and as such it might be considered by some to be a failure. But it did provide valuable training for the U.S. night fighter program and the crews who flew it in combat gained essential combat experience for when they eventually received the P-61. With that aircraft they were able to achieve exceptional results and some of this must be attributed to their earlier association with the P-70. Men like Carroll Smith, the top U.S. night fighter ace, cut their teeth on the P-70, and his later success was due, in part to this little known version of the A-20.

(Right) An early model P-70A-2 converted from an A-20G. The aircraft is in the standard color scheme of Olive Drab rather than Dull Black. (USAF)



(Above) The first P-70 sits at Wright Field in a color scheme of Dull Black. The radar was mounted in the nose and the glass nose was painted Black. The object under the fuselage is a ventral pack containing four 20mm cannons. (USAF)



Head-on view of a P-70 over the Pacific as it approaches another P-70. The guns have flash suppressors attached so as not to blind the pilot when the guns are fired. The radar antennas are the two objects protruding from the fuselage just aft the nose. The color scheme is Olive Drab on top and Dull Black below. (USAF)





These P-70s are receiving maintenance work prior to deployment at Guadalcanal in late 1943. Overall finish is Dull Black. The prominent side mounted antennas can be seen clearly. (USAF via Bell)



A flight of P-70s on a training mission over the Salinas Valley in California. They belong to an Operation Training Unit of the 4th Air Force. (USAF)



P-70
Night Fighter

